

RSES Meeting Plans Nearly Complete

(Concluded from Page 1, Column 5) leaving afternoons and evenings open for the inspection of exhibits and entertainment programs.

Annual R.S.E.S. banquet, which about 800 are expected to attend, will be held at 8 p.m. on the opening day of the convention.

Business session of the second day will be devoted to talks covering the following subjects: applications and adjustments of controls, the independent service organization and the national organization, merchandising, heat transfer services, and the advantages and disadvantages of commonly used refrigerants.

Headlining the day's speakers will be Gerald E. Stedman, vice president in charge of market planning for the Cramer-Krasselt Co., Milwaukee, Norge advertising agency. Mr. Stedman will speak on merchandising.

The annual "Exhibitors' Frolic" will take up the evening of the convention's second day. Participated in by the 70 firms having exhibits at the meeting and by delegates, this year's entertainment will be in the form of a "Monte Carlo Night," with participants striving for some 25 prizes using stage money at the various gambling devices.

Exhibitors who have donated prizes for the "Monte Carlo Night" program include: Alco Valve Co., Ansul Chemical Co., Harry Alter Co., American Brass Co., Automatic Products Co., Bonney Forge and Tool Works, H. Channon Co., Dayton Rubber Mfg. Co., Detroit Lubricator Co., E. I. Du Pont de Nemours Co., Duro Metal Products, Fedders Mfg. Co., Imperial Brass Mfg. Co., Mills Novelty Co., Mueller Brass Co., Peerless of America, Inc., Penn Electric Switch Co., Rotary Seal Co., Snap-On Tools, Inc., Tecumseh Products Co., and Ranco, Inc.

Educational program of the convention's third day will be devoted to the following subjects: business management and credit, a typical air-conditioning job, a moving picture on the operation of expansion valves, and several other subjects at present awaiting the acceptance of speakers.

Members of the Chicago R.S.E.S. chapter in charge of the various convention committees include:

Publicity, Irving Alter; reception, H. W. Blythe; program, B. B. Dawes; auditing, Harry Drownes; manufacturers, George Franck; housing, William Hauber; educational, R. L. Hendrickson; jobbers, Ray Johnson; entertainment, George Monjian; exhibitors, Ray Polley; membership, Fred Roth; registration, Fred Roth; registration, E. W. Scotten.

Mealey & Reinach Direct Kelvinator in West

(Concluded from Page 1, Column 4) vinator's entire western household appliance sales territory comprising 11 states, according to the announcement made by Ralph C. Cameron, Kelvinator's household appliances sales manager.

As sales manager of the western commercial division Mr. Reinach will supervise Kelvinator's commercial sales activity in a territory extending from Canada to the Mexican border, and from Kansas to the Pacific Coast, declares J. A. Harlan, commercial division sales manager for Kelvinator.

Mr. Reinach was formerly manager of Kelvinator's standard commercial and liquid cooling department.

Appointment of Mr. Mealey as western regional manager for household appliances and A. H. Reinach as sales manager of the western commercial division is declared by factory executives to round out Kelvinator's policy of establishing separate sales organizations for its household appliance and commercial refrigeration divisions.

Chicago Plans Expansion Of Water Facilities

(Concluded from Page 1, Column 5) served the city's principal shopping section for 83 years.

"This is the start of a series of expansions in Chicago's water supply and disposal capacity that eventually will result in abandonment of a pipe system that first served a reservoir built in 1854 on a spot now the site of a skyscraper in Chicago's financial district," Mr. Henderson said.

"Chicago's conditions are duplicated in some degree in various other cities where the water and sewerage systems have not kept pace with construction and population growth of the past half century or more.

"Air-conditioning equipment is available that consumes minimums of water in all such circumstances down to as little as 5% of the amount needed for the system.

"The Department of Commerce survey and Chicago's prompt move toward adjusting its supply facilities to modern requirements will crystallize action in many other cities."



Known
wherever refrigerants
are controlled

Revised Resolutions Drafted at Meeting

(Concluded from Page 1, Column 2)

The other is directed to manufacturers and jobbers of refrigeration parts and supplies, and requests their cooperation in restricting sales to authorized dealers and service shops with established places of business, giving uniform discounts, and issuing catalogs separately from discount sheets. In return, dealers and service men promise to buy only from members of National Refrigeration Supply Jobbers' Association.

Last week's meeting opened with the reading of the story on the movement published in the Oct. 6 issue of AIR CONDITIONING AND REFRIGERATION NEWS, and of letters from organizations to which copies of the resolutions had been sent to ascertain their interest in the recommendations, together with suggestions for changing or improving them.

Several such suggestions were received and taken under consideration. It was emphasized at the meeting that the resolutions, as submitted, are not arbitrary in their provisions, and that changes and modifications will be made in accordance with suggestions by interested organizations and individuals. Notice to this effect was sent to all those to whom texts of the two proposals had previously been submitted.

Names of individuals and organizations indicating support of the movement will not be publicized until convention time, it was decided at the meeting.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of Air Conditioning and Refrigeration News published weekly at Detroit, Michigan for Oct. 1, 1937.

State of Michigan } ss.
County of Wayne }

Before me, a notary public in and for the State and county aforesaid, personally appeared F. M. Cockrell, who, having been duly sworn according to law, deposes and says that he is the publisher of the Air Conditioning and Refrigeration News and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: F. M. Cockrell, Detroit, Mich.
Editor: George F. Taubeneck, Detroit.
Managing Editor: Phil Redeker, Detroit.
Business Manager: J. R. Adams, Detroit, Mich.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

F. M. Cockrell, Detroit, Mich.
Margaret E. Cockrell, Detroit, Mich.
Helen Cockrell, Detroit, Mich.
Geo. F. Taubeneck, Detroit, Mich.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person

or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(s) F. M. Cockrell.

Sworn to and subscribed before me this 20th day of September, 1937.

(Seal) (s) Robert E. Boyse.

(My commission expires Nov. 8, 1940.)

A CASTLE of Comfort in DETROIT

BARLUM HOTEL

CADILLAC SQUARE AND BATES STREET

810 OUTSIDE ROOMS

\$2.50

FROM 2 DAILY

ALL WITH BATH

Leakproof..

One Reason..



No

"CHARGE" LOSS..

Leakage, "Charge" loss, is not only expensive, it is actually dangerous. A-P Expansion Valves have never been known to leak,—and for good reason. The two sections of A-P Expansion Valves are ROLLED TOGETHER, forming a MECHANICAL LOCK. Further protection is provided by soldering at this "Lock", making an absolutely leak-proof union without mechanical stress,—permanent safety and trouble-free operation.



EXPANSION VALVES . . .

For Air Conditioning or Refrigeration, A-P Expansion Valves and Solenoids have become the standard of dependability and efficiency among the industry's experts. Their Simplicity of design, Supersensitivity in operation, trouble-free service have won the enthusiastic preference of Refrigeration Service Engineers and Users everywhere.

Progressive Jobbers Everywhere
Stock Controls

ICE CUBES to the world



To maintain in the ice cube the purity of a falling raindrop, refrigeration engineers everywhere favor the complete freedom from moisture and the absolute purity of the world-recognized refrigerant, Extra Dry ESOTOO.

From world-wide thousands of distributing points, Virginia Smelting Company delivers its famous refrigerants promptly everywhere—truly it sends "Ice cubes to the world."

EXTRA DRY ESOTOO

PRODUCT OF
VIRGINIA SMELTING CO.
WEST NOFFOLK VA



AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY — SECOND STREET
MILWAUKEE WISCONSIN

REFRIGERATION NEWS

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News
Member Audit Bureau of Circulations. Member Associated Business Papers.

VOL. 22, No. 8, SERIAL NO. 448
ISSUED EVERY WEDNESDAY

Entered as second-class
matter Aug. 1, 1927

DETROIT, MICHIGAN, OCTOBER 20, 1937

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Business News Pub. Co.

IN TWO PARTS, PART ONE
TWENTY CENTS PER COPY

Line of Ranges Announced by Copeland Corp.

One Model to Feature Kitchen Heater as Part of Range

DETROIT—Copeland Refrigeration Corp. has just put on the market a line of five electric range models, a kitchen heater, and a portable electric cooker, rounding out the line of household appliances which it has available for distributors and dealers. In addition to household and commercial refrigeration equipment, the company is now offering ranges, washers, and ironers.

Samples of all new range models are now being shipped to distributors and dealers, the company announced, and quantity shipments will be available in ample time to fill holiday requirements.

Featuring Copeland's newest line is the "Whitemore" model C-504, combining an electric range with

(Concluded on Page 24, Column 2)

New Ranges & Washers Will Be 'Frigidaire's'

DAYTON—The new lines of electric ranges and electric washers to be manufactured by the Frigidaire division of General Motors Corp. will be marketed under the trade-name "Frigidaire," announces Frank R. Pierce, manager of Frigidaire's household division.

Sentiment of Frigidaire dealers, salesmen, and distributors has had a major part in the decision to broaden the use of the Frigidaire name, he said.

The company's Moraine City, Ohio, plant has been in production on electric ranges since Oct. 8, and information on marketing plans will be released toward the end of the year, Mr. Pierce stated. He indicated that still other household appliances will be added to the Frigidaire line in the not too distant future.

'Flying Yacht' to Have Electric Refrigerator

SEATTLE—All the comforts of home aloft—including an electric refrigerator—are included in the new "Flying yacht" under construction here by Boeing Aircraft Co. for Capt. George Whittell, San Francisco peninsula millionaire.

The plane, when completed, will cost the captain about \$300,000. Besides the refrigerator, it will include a shower bath (the first ever built in an airplane), a dining room and lounge, bedrooms for four guests, a master suite, hot and cold running water, and a radio.

New York Dealers Plan 'Blue Book' For Radio Trades

NEW YORK CITY—Two different plans for the regulation of trade-in allowances on used radio sets under New York's Feld-Crawford fair trade act, both of them involving the use of a radio "blue book," are under consideration by distributors and dealers in the New York metropolitan territory, it was reported last week.

First and most popular of the plans being studied is based on the setting up of an annual depreciation percentage to be deducted from the manufacturer's original sales price, with the remainder representing the trade-in value of the set.

Details of the percentages to be deducted are being worked out at present. Greatest difficulty being experienced is in the classification and grouping of prices of the sets produced during the last dozen or more years.

Second method calls for the setting

(Concluded on Page 24, Column 4)

Plumbers to Install Dayton Air Cooling

DAYTON—All water-using air-conditioning systems installed in Dayton must be classified as plumbing fixtures and must be installed by a licensed master plumber, according to an announcement by James P. Murray, chief city plumbing inspector.

Last June, Mr. Murray indicated that all refrigeration installations requiring the use of water would be classified as plumbing fixtures.

Elaborating upon his air-conditioning edict, Mr. Murray explained that special attention is being paid to

(Concluded on Page 24, Column 1)

Georgia Power Appliance Sales Up 3,000 Units

ATLANTA—Sales of major appliances by Georgia Power Co. during the first eight months of this year are approximately 3,000 units ahead of those for the same period of last year, statistics released by the company show.

Unit sales of refrigerators, ranges, washers, ironers, and water heaters through August of this year total 16,232 units, compared with 13,279 units during the same time in 1936.

Individual sales for the first two thirds of the year are: refrigerators, 7,678 units, compared with 5,658 at this time last year; ranges, 4,433 units compared with 4,062 last year; water heaters, 2,632 units compared with 2,400 last year; washers, 1,228 units against 935 last year; and ironers, 261 units compared with 224 last year.

Your Business Practices—Are They Up to The Average?

One of the best ways for an electric refrigerator and appliance dealer to "line up the sights" on his own business operations is to compare his experiences with those of others in the same or similar fields.

Each year, the research and statistical division of Dun & Bradstreet conducts a survey covering operating averages (gross profit, net profit, gross margin, realized mark-up, various items in overhead expense, amount of business done on cash, open credit, or instalment) of retailers in several lines of business.

Included in the current survey (covering 1936 operations) are dealers in electrical and gas household appliances, retailers who sell electric refrigerators only, and oil burner and stoker firms.

Results of Dun & Bradstreet's fact finding in these three fields are published on pages 6 and 7 of this issue. Appliance dealers interested in knowing just how their various operating percentages stack up in comparison with those of the average retailer, will find that this survey gives them a pretty good answer.

West Penn Power Quits Appliance Selling

PITTSBURGH—West Penn Power Co., for the past several years a direct merchandiser of electrical appliances and lamps, will discontinue this part of its activities on Jan. 1 of next year, reports H. S. Metcalfe, director of public relations for the utility company.

West Penn believes that merchants in its territory are now equipped to display and sell electrical appliances effectively, so that use of the company's prime product, electricity, will continue in the future as it has in the past, Mr. Metcalfe said.

The utility will continue to advertise and demonstrate electrical appliances as actively as before, but actual sales of such products will be left entirely to dealers. Responsibility for all appliances sold currently or in the past by West Penn's appliance department will continue to be assumed by the company.

Appliances Included in Baltimore Auto Show

BALTIMORE—For the first time in the show's history, refrigerators, air-conditioning units, oil burners, radios, and other major electrical appliances will be included in the exhibits at the 32nd annual Baltimore Automobile and Motor Boat Show to be held Nov. 13 to 20 in the Fifth Regiment Armory under the sponsorship of the Automobile Trade Association of Maryland.

New Chief Engineer



RUSSELL W. AYERS

Curtis Strike Settled, Production Resumed

ST. LOUIS—Its seven weeks' strike settled, the plant of Curtis Refrigerating Machine Co. resumed operation on Monday, Oct. 11, and was in full production by Oct. 13, reports L. C. Blake, advertising manager. The company is again prepared to serve customers in the normal way, he stated.

The agreement which ended the strike was executed between Curtis and its employees, and no union is a principal to it, Mr. Blake said. Contract is signed by a committee of Curtis employees whose only designation is that of an "authorized committee."

At an election held in the plant last April, the majority of employees voted to have the C.I.O. represent them as bargaining agent, Mr. Blake said. Under provisions of the Wagner act, the company carried on its negotiations with the C.I.O., whose only entrance into the settlement has been that of the bargaining agent, he added. The union is not a principal to the agreement.

Commercial Refrigeration Buyers' Guide

Published as a supplement to this issue of AIR CONDITIONING AND REFRIGERATION NEWS is the "Commercial Refrigeration Buyers' Guide," a directory of manufacturers of commercial refrigeration equipment and its major component parts and accessories, classified by product.

It is given to the readers as a sample of the type of information that will be published in the 1938 Refrigeration and Air Conditioning DIRECTORY, now in preparation.

S-W Planning Manufacture of New Appliances

Ayers Named to Head Refrigerator Dept. Engineering

CHICAGO—Stewart-Warner Corp. will soon announce manufacture of lines of other household electrical appliances in addition to radios and refrigerators, President J. E. Otis, Jr., said last week.

At the same time, Mr. Otis announced the appointment of Russell W. Ayers, since 1929 a member of the refrigerator engineering staff of General Electric Co., as chief engineer of Stewart-Warner's refrigerator division.

Appointment of Mr. Ayers is the first step in an expansion program involving increased personnel and manufacturing facilities to make way for new products in the company's home appliance divisions, Mr. Otis said.

Mr. Ayers has been engaged in electric refrigerator design and research since 1925, when he became chief engineer of the refrigerator division of Savage Arms Co. Previous to that time he was on the engineering staff of Yale & Towne Mfg. Co.

Convention Is Postponed To Nov. 11-12

CHICAGO—Stewart-Warner Corp.'s refrigerator distributors' convention, originally scheduled for Nov. 4 and 5, has been postponed a week to Nov. 11 and 12, announces C. C. DeWees, advertising manager of the radio and refrigerator department. The convention will be held at the Edgewater Beach hotel.

Dow Leaves G-E to Join Norge Outlet in Kansas City

KANSAS CITY—Paul H. Dow, for 11 years with General Electric Co.'s lamp and appliance departments and most recently director of the General Electric Institute, has resigned effective Oct. 11 to become assistant general sales manager of Moser & Suor, Norge appliances distributor here.

In his new position, Mr. Dow will be associated with Don Keller, formerly a G-E distributor in the Kansas City territory, who is general sales manager of Moser & Suor and in complete charge of the company's operations. Mr. Dow's duties with Moser and Suor will include direction of advertising and sales promotion activities.

Summer Lasts Longer in Evansville, these Electrolux Men Find



(1) Carroll Miller, Pacific Coast Electrolux representative is photographed by Carl Conkey, whose convict-or-zebra appearance is the result of the hot Evansville, Indiana, sunshine flooding through Venetian blinds. (2) Mr. Conkey sets the lens aperture on his camera. (3 and 4) Salesmanager George Jones (with the flyswatter) says that there are no flies on Electrolux, but there still are a few around Evansville. A good southern exposure gives length to the summers in this southern Indiana industrial community.

Harry Mealey Says Goodbye to Associates at Hotpoint



(1 and 2) Harry Mealey, formerly manager of refrigeration sales for Hotpoint, is having a last happy session with Howard Scaife (center) and Art Grove (right), advertising manager, before leaving for his new post with Kelvinator. (3 and 4) Mr. Grove, whose right arm was broken recently in an automobile accident, becomes a southpaw business executive.

New York A.S.R.E. Has Opening Meeting

NEW YORK CITY—Opening dinner meeting and election of officers of the New York section of the American Society of Refrigerating Engineers was held at 6:30 p.m. Oct. 14 at the Building Trades Employers Association rooms, 2 Park Ave.

Speakers of the evening were John R. Parsons, consulting physicist, who discussed "Effective Temperature—Its Measurement and Application," and Prof. C. F. Kayan of the college of engineering, Columbia university, who talked on "Vignettes of Science in Europe."

Michigan Supreme Court Rules Against Sales Tax Refund on Repossessed Jobs

LANSING, Mich.—The Michigan Supreme Court has ruled, in a case appealed by the Rudolph Wurlitzer Co. of Detroit, that the state is not liable for refunds of sales tax collected on instalment sales when payments are not kept up and the goods eventually are repossessed by the retailer.

Any subsequent sale of the repossessed merchandise is also subject to the sale tax levy, Michigan's highest court holds.

In a previous ruling, the Michigan court had held that merchants have the right to take credit in their

sales tax returns for merchandise returned to them. The case involved Montgomery, Ward & Co.

The new opinion is of major importance to the state, Attorney General Raymond W. Starr said, since about one-fourth of all retail sales are made on instalment, a considerable percentage of which result in repossessions.

In its ruling on the Wurlitzer case, the court held that "the statutory provision permitting the seller to deduct credits or refunds for returned goods relates to transactions wholly apart from conditional sales."

FTC Head Sounds Off Against Price Laws

WHITE SULPHUR SPRINGS, W. Va.—A warning that so-called "fair trade laws" would prove a destructive boomerang to all who attempted to use them as a means of unscrupulous price-boosting and consumer exploitation was sounded by William A. Ayres, chairman of the Federal Trade Commission, in a speech before the recent convention of the National Wholesale Druggists' Association.

If these "fair trade laws" do not live up to their name, he said, and should consumers be made to shoulder an unjustifiable burden of unreasonable prices, public opinion will turn upon those individuals or groups responsible for the passage of these laws as well as on those who attempt to take advantage of their provisions.

Mr. Ayres also reminded the druggists that the Clayton act is still in force, and that, consequently, resale price maintenance agreements between competing manufacturers are illegal.

Mr. Ayres defended the Robinson-Patman act by declaring that it merely preserves the equality of opportunity.

Upholding the advertising allowance section of this act, Mr. Ayres pointed out that it does not require the granting of allowances, but merely provides that if such an allowance is extended to one customer it must be extended to that customer's competitors on equal terms.

Five cases arising out of the Robinson-Patman act already have been disposed of, Mr. Ayres reported, 25 new complaints have been filed, and numerous conferences have been held with business men to clarify the terms and purpose of the act.

Ice Interests Budget \$2,500,000 For 1938 Promotion

CHICAGO—National Ice Advertising, Inc., has approved assessment of 3 cents a ton, expected to total approximately \$2,500,000, to be used in advertising ice during the forthcoming year, Hurley G. Hust, manager reports. Donahue & Coe, Inc., has been reappointed as the advertising agency in charge of the account.

Trustee Settling Affairs Of Steelcraft Industries

CINCINNATI—It is not likely that creditors of Steelcraft Industries, Inc., bankrupt manufacturer of refrigerator cabinets, will receive any dividend when affairs of the company are finally settled, reports Dawson E. Bradley, trustee. The bankruptcy case probably will be closed in about 60 days, Mr. Bradley says.

Jersey Tire Co. Moves To New Quarters

PERTH AMBOY, N. J.—Jersey Tire Co., Kelvinator refrigeration, home appliances, and air-conditioning distributor in this territory, has completed renovation and expansion of its main office and salesroom here. Enlarged quarters afford a floor area of 8,000 sq. ft.

Louis Kaplowitz is president of the company, Leo Kaplowitz is vice president, and Benjamin Kaplowitz is secretary-treasurer. The company was established in 1918 as a tire store only.

New York Far in Lead In Household Sales During August

States and Territories	Quantity Household Low Sides
Alabama	735
Arizona	322
Arkansas	419
California	7,625
Colorado	632
Connecticut	1,905
Delaware	311
District of Columbia	1,396
Florida	2,223
Georgia	848
Idaho	403
Illinois	5,767
Indiana	2,897
Iowa	617
Kansas	713
Kentucky	954
Louisiana	1,176
Maine	598
Maryland	1,736
Massachusetts	5,635
Michigan	6,088
Minnesota	1,222
Mississippi	522
Missouri	2,311
Montana	261
Nebraska	460
Nevada	90
New Hampshire	388
New Jersey	4,287
New Mexico	153
New York	21,775
North Carolina	728
North Dakota	101
Ohio	7,153
Oklahoma	1,167
Oregon	968
Pennsylvania	10,518
Rhode Island	671
South Carolina	651
South Dakota	144
Tennessee	1,353
Texas	5,492
Utah	892
Vermont	263
Virginia	1,170
Washington	2,225
West Virginia	789
Wisconsin	2,317
Wyoming	102

Total United States 112,112

Canada 2,514

Other Foreign (Including U. S. Possessions) 11,402

Total For World 126,028

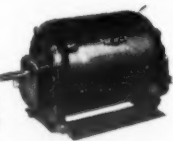
Note: This summary includes adjustment figures reported by several companies which do not represent their actual August sales but are corrections to be applied to their first seven months totals to give their correct total apportionment among the various states for eight months.

Dependable

Old Faithful Geyser, one of the wonders of Yellowstone National Park, always lives up to its name. Night and day, at regular intervals, Old Faithful spouts a column of water into the air, often attaining a height of 170 feet.

The dependability of Delco motors is a particularly important asset to the man who sells household appliances. The rigors of everyday use, together with frequent starting and stopping, demand extreme dependability in the power unit—and Delco motors are designed and built to provide it. Dealers, manufacturers and consumers recognize this fact. That is why leading makes of washers, ironers, refrigerators, air conditioners, oil burners and stokers are Delco-equipped. Delco Products Division, General Motors Corporation, Dayton, Ohio. In Canada: McKinnon Industries, Ltd., St. Catharines, Ont.

DELCO
MOTORS



TAG SNAPON CONTROLS For Service Replacement profits

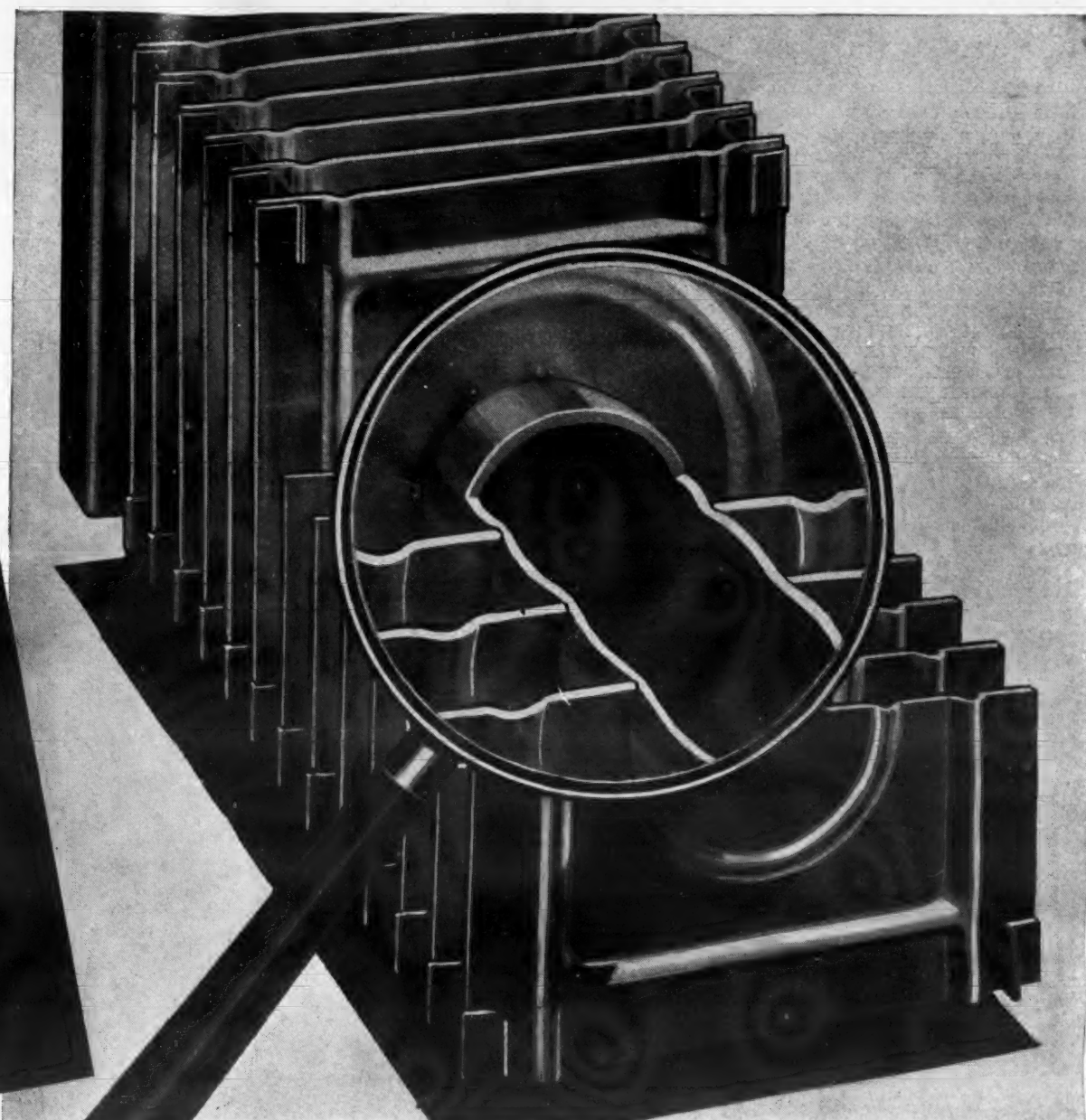
The four essentials of any refrigeration controlling device are fully met in TAG's Snapon Control Type R-7 shown here. The construction is the simplest of any on the market. The current carrying and movable parts are rugged and have the Underwriters' approval up to and including 1½ HP motors, so that the R-7 will frequently outlive the units it serves. Its accuracy has been proven in many breakdown tests by the nationally known manufacturers who use it. And, in appearance it bespeaks its solid utility and faultless operation. Send for a copy of the new TAG Catalog No. 1136-25.

ASK YOUR JOBBER ABOUT TAG SNAPON CONTROLS AND TEST EQUIPMENT.

C. J. TAGLIABUE MFG. CO. Park & Nustrand Ave's., Brooklyn, N. Y.



**6000%
SAFETY
FACTOR
AND A PERFECT
BOND**

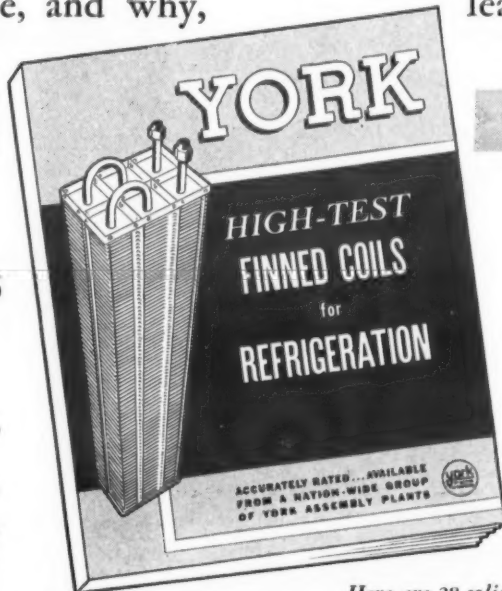


**EACH FIN IS BONDED TO TUBING BY 2800 POUNDS PRESSURE,
A MOST VALUABLE ADVANCE IN REFRIGERATION COIL CONSTRUCTION
...READ ABOUT IT IN THIS NEW BIG FREE BOOK**

TWENTY-EIGHT HUNDRED POUNDS OF HYDROSTATIC PRESSURE PER SQUARE INCH bonds the tubing for life to the rigid, perfectly-spaced fins...crowds tiny bulges in the tubing between fins and produces the highly important ripple-action...an important York feature for increasing "K" value.

No magazine ad could tell you all about this new High Test Finned Coil, how it's made, and why,

and what it's good for, so we have written a book about it, a book you will want for your permanent reference files. Send for it, read it. You will agree that in providing a coil that is custom built,* that is a dramatic improvement in fin coil efficiency, that is sold at a competitive price, York emphasizes once more its half-century of refrigeration leadership.



Here are 28 solid pages of useful information, diagrams, pictures, printed in color, bound in durable filing size cover.

Here's a Book You Will Want to Read and KEEP. MAIL THE COUPON TODAY

York will mail this interesting, valuable REFERENCE BOOK absolutely free to established refrigeration concerns, engineers, architects, etc., as long as the supply lasts.


TELLS YOU: How to guard against wasting surface • How to select coils • How to calculate loads for Walk-in Coolers, Reach in Refrigerators, Top Display and Double Duty Cases • How to balance coil and condensing unit capacities • How to select coils for High "K" Value • Principles of fin spacing • How to fit coils to bunker space • How to order.

GIVES YOU: Maximum flow, minimum pressure drop • Tested to Over 6000% safety factor • Survey checklist • Eight steps to successful installations • Specific heat of food products • Temperatures by types of service • Outside air temperatures of principal American Cities • Five Tips on Coil Application • Coil Surface area tables • List Prices.

***FLASH! YORK ESTABLISHES MANUFACTURING PLANTS AT 8 STRATEGIC POINTS**

There's One Near You that Insures Low Freight Cost and Quick Delivery.

Decentralized manufacture at eight key points in the nation means your coils are custom-built, fabricated after your order is received. But you only pay stock prices. Your coils are shipped within 24 hours, so there's no further need of tying up your money in heavy coil inventories. You save materially on freight, and don't forget... you get your coils quick!

YORK Headquarters for Mechanical Cooling since 1885
REFRIGERATION  **AIR CONDITIONING**

Fill in the Coupon NOW—Mail to YORK TODAY

York Ice Machinery Corporation
York, Pennsylvania, Dept. E. R.

Please send me a complimentary copy of your York High Test Finned Coil Catalog.

Name of Firm.....

Name of Individual.....

Title.....

Address.....

All Nema Sections To Meet Next Week

CHICAGO—Members of the Refrigeration Division of National Electrical Manufacturers Association will meet at the Palmer House here during the annual Nema meeting to be held the week of Oct. 24. Some 130 other section, group, and committee meetings are also scheduled.

With the exception of one section of the Policies Division meeting, all group sessions will be closed to all but members of the interested subdivisions. The open meeting, to be held at 8:30 p.m., will include an address by A. R. Small, president of Underwriters' Laboratories, on the work of that organization; presentation of the James H. McGraw award for the most important personal contribution to progress in the electrical industry; and a talk by Nema's counsel, Francis E. Neagle, on "Present Day Laws Affecting the Electrical Industry."

New England Theaters Turn To Air Conditioning

BOSTON — Air-conditioning or cooling equipment has been installed in some 20 theaters in New England this summer, reports Brad Angier in a recent edition of Box Office, weekly theater trade publication.

Investments which both independent and chain theater operators made in air-conditioning equipment gave promise of more than paying for themselves, this publication stated, as summer shopping crowds sought relief in air-cooled theaters during the several weeks of hot weather experienced in the east.

Jensen Heads Kelvinator's Southeastern District

DETROIT — George M. Jensen, formerly special assistant to Campbell Wood, Kelvinator director for public utilities, has been appointed southeastern regional manager with headquarters at Atlanta, Ga., reports Ralph C. Cameron, sales manager of household appliances, Kelvinator division of Nash-Kelvinator Corp.

Mr. Jensen succeeds J. B. Reeves, who has been granted a leave of absence by the company due to ill health. Mr. Reeves has been connected with Kelvinator since 1934, and has been the company's southeastern regional manager for the past year.

Prior to coming to Kelvinator, Mr. Jensen was affiliated for a number of years with several nationally known household appliance companies, and has had extensive experience in the merchandising of all types of household electrical equipment.

Powell Crosley III Heads New Radio Mfg. Division

CINCINNATI—Powell Crosley, III, vice president of Crosley Radio Corp., has been placed in charge of the radio set manufacturing division of the company, and J. P. Rogers, also a vice president, has been placed in charge of the private brand division covering the sale of automobile radio sets to car manufacturers and special brand radios and refrigerators to wholesale users, according to an announcement by Powell Crosley, Jr., president.

Owens-Illinois Opens Glass Fiber Laboratory

NEWARK, Ohio—Formal dedication of the new research laboratory built here by Owens-Illinois Glass Co. for the purpose of discovering practical new applications for glass fiber was scheduled to be held Oct. 20 in the presence of various industrial research directors, educators, editors of scientific journals, and representatives of several national publications.

The day's activities will include a trip through the Owens-Illinois Fiberglass plant which is adjacent to the laboratory, as well as breakfast, luncheon, and dinner at Granville Inn, Granville, Ohio.

Channing Sweitzer Dead; Directed N.R.D.G.A.

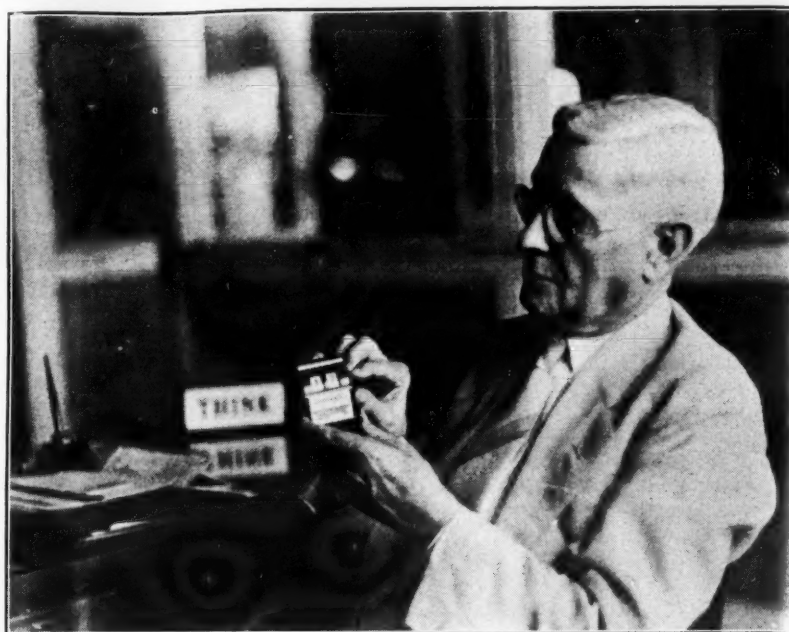
RIDGEWOOD, N. J.—Channing E. Sweitzer, managing director and treasurer of the National Retail Dry Goods Association, died at his home here last week after a short illness. He was 49 years old.

Mr. Channing was a graduate of York Pennsylvania Collegiate Institute, Johns Hopkins university, the University of Pennsylvania, and a post graduate student at Columbia.

Joining the staff of the N.R.D.G.A. in 1922, Mr. Sweitzer was made managing director of the organization in 1928, which position he held at the time of his death.

In addition to this position, Mr. Channing served as president for a term of the New York Trade Association Executives, and as a member of the Executive committee of the American Trade Association Executives.

Another Day, Another Dollar



C. C. Hull, president of Rex Mfg. Co., starts the morning by turning up the day on his desk calendar. Rex is running at capacity turning out cabinets for Fairbanks-Morse, Stewart-Warner, and Crosley.

Advertising Has Helped to Create Wealth and Has Made Good Products Cheaper, Says Parlin

BOSTON—Advertising has a social function in that it is a curative to laziness—the economic curse of any nation—but more than that it has also paid its way in American business life, declared Charles Coolidge Parlin of the division of commercial research, advertising department, Curtis Publishing Co. in his address before the recent Boston Conference on Distribution.

"The road to wealth for a nation is to be found in enthusiastic work to attain coveted things," said Mr. Parlin. "Advertising, by creating desires for new things, has produced enthusiastic endeavor on the part of millions, and from that endeavor has come the marvelous development of our national wealth."

"Twenty-five years ago many a manufacturer asked me, 'Does advertising pay?' Few manufacturers today ask that question. The evidence is overwhelming."

"Here is a chart which contains the names of a thousand makes of cars which made a bid for a place in the American market, with a little red line through the name of each make which is no longer produced. Here is the list of those cars which have survived and opposite each is the amount spent in national magazine advertising in the past five years."

"While I believe that national magazine advertising is an important reason for this survival, I will not argue on the point, but will say that which no one can dispute, namely, that in the most severe struggle for the survival of the fittest ever staged in American industry, the fact that these companies spent such large sums of money in national magazine advertising was not a sufficient handicap to put a red line through their names."

"One other illustration. Canned tomatoes have not been nationally advertised. In a survey of 3,123 pantries we found 370 brands, and the largest number of pantries in which any brand was found was 54."

"But put the tomatoes in other cans and call the product 'Soup' and see how the picture changes. Only 84 brands were found and one nationally advertised brand was found in 864 pantries."

"In sales meeting a quarter of a century ago, a huge salesman shouted, 'Who pays for advertising?' To that salesman I replied, 'The consumer pays for advertising. The consumer also pays your salary and every other sales and manufacturing cost. But if by your question you mean to ask, Does an article cost a consumer more because it is advertised? my answer is that it does not. Advertising is the least expensive method of selling a good product.'"

Today we have abundant evidence that that answer was correct, said Mr. Parlin, pointing to the fact that in the past 25 years, the \$1,500 advertised automobile has become a much finer automobile at \$600; the \$50 advertised camera became a superior one at \$17.50, the advertised box camera at \$8 has become an im-

proved Brownie at \$1; the 25-cent can of advertised soup became a better can of soup at 10 cents."

In 1922 a few thousand people with radio sets costing from \$100 to \$500 could startle their friends by a voice over the ether; today over 20,000,000 homes are equipped with radio, the speaker pointed out. Oranges which a few years ago were presents in the Christmas stocking today are a staple item of food, and millions of babies daily enjoy their glass of orange juice."

"Advertising has transformed American life," Mr. Parlin continued. "Advertising got the cat out of the cracker barrel and brought about the modern grocery store with its food in sanitary packages. Advertising rescued the housewife from drudgery by telling her of labor-saving devices. Advertising saved countless lives by selling better refrigeration, by getting dust out of homes, by promoting health-giving foods, by suggesting more healthful clothing, better beds and better ventilation."

"Advertising convinced each of us that an automobile was made for us and that we, ordinary citizens without engineering training, could drive a powerful engine on the highway, and thus a continent was transformed by the building of two billion dollars' worth of fine highways, and today more than half of all American families enjoy individual transportation second only to the magic carpet of the Sultan's dream."

"But," says the skeptic, 'would this not have come without advertising?'"

"To which I answer, without advertising such changes would have come slowly, if at all. It was advertising which created in the minds of the masses the thought that new products were intended for them. It was purchases by people induced to buy through advertising, which lowered costs and brought prices within reach of all. Thus it was advertising which, within the memory of men not yet 40, produced a revolution in better living such as before had not occurred in centuries."

Advertising needs time and continuity, Mr. Parlin declared.

"You cannot by any method of feeding bring a 10-year old boy in one year to man's maturity," he said. "You cannot by any process of cramming give a boy in six months the equivalent of four years' intellectual growth in college. Nor can you by a brief series of advertisements get that thorough confidence of the public that can be won by consistent effort over a period of years."

"How long should a man continue to advertise? As long as he wishes to hold a market, for a manufacturer is selling not a standing army but a parade. Every 33 years a generation of buyers marches out and a generation of prospects marches in."

"Are there any products which should not be advertised? No product should be advertised which cannot stand the full blaze of publicity. Only those products can be successfully advertised which have merit and give a good value for the price charged."



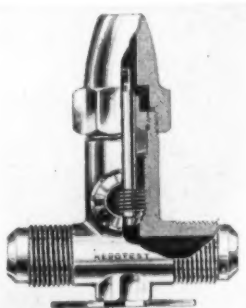
QUALITY VALVES and FITTINGS

The Kerotest standard of outstanding quality in valves and fittings is as old as the refrigeration industry itself. Beginning in the "Stone Age" of Mechanical Refrigeration, Kerotest has been constantly identified with the best in valves and fittings.

New improvements, new designs, new advancements in Kerotest refrigerating valves and accessories of yesterday are accepted as standard today by the largest manufacturers of refrigerating equipment in the world. Today millions of

dollars of expensive refrigerants flow through Kerotest Valves, Fittings and Accessories, mute testimonials of the confidence behind Kerotest quality and design.

We consider this confidence our greatest asset . . . the dynamo of continuous Kerotest progress and advancement and a logical incentive to serve your needs better than ever before. Warehouse stocks of Kerotest products are conveniently available through a nationwide network of Kerotest Jobbers in every important industrial center.



Among the recent additions to the Kerotest line of Packed Valves are Types 498 two way, and 499 three way. They are furnished with hexagon brass

seal caps and are available with either 3/8" SAE Flare or 3/8" O.D. Solder connections which are machined directly on the body, eliminating the use of adapters.

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PA.

Bad Trade-In Practices Traced to Dealers' Inexperience and Manufacturers' Desire For Added Outlets at Any Cost

HARTFORD, Conn.—Bad trade-in practices by dealers in electrical and gas household appliances are usually the result of inexperience, coupled with the desire of the manufacturer to secure additional retail outlets without regard to whether or not they intend to merchandise on a sound basis, W. L. Highmore of the New London division of Connecticut Power Co. says in an article on the trade-in problem in the current issue of "The Illuminator," monthly publication of Connecticut Power and Hartford Electric Light Co.

Terming excessive trade-in practices "a dangerous menace to profitable merchandising," Mr. Highmore contends that, with refrigeration bureaus no longer as active as formerly, public utility companies can be a leading force in getting dealers to handle trade-ins properly.

RESALE VALUE

Text of his article follows:

"The trade-in will get you if you don't watch out," said a recent newspaper caption referring to the automobile business. It is not only the automobile business that is endangered by the trade-in bugaboo, however—it is every type of business, including the merchandising of gas and electric appliances.

"There can be no criticism of trading where the article taken in trade has a resale value and the trade-in allowance is such as to permit the dealer to sell without taking a loss. All too often the dealer loses sight of this important factor and sees only the immediate sale of a new article, trusting to luck that he can get his money out of the trade-in.

"If he sells it at the same price allowed for it, he is apt to feel that he has done well, having obtained full price then on the original sale. Actually, he is taking a definite loss since he has the same overhead expense and usually more selling expense in connection with the used appliance.

"Specialty selling of vacuum cleaners, washers, radios, and electric refrigerators, usually involves a trade-in allowance to the prospective purchaser for his old equipment. As these appliances have usually wide public acceptance, it should be possible for the dealers in any community to merchandise them on a profitable basis in spite of the necessity for a trade-in allowance.

FOOLISH ALLOWANCES

"Actually, it is impossible in any community to merchandise vacuum cleaners, washers, and radios at a fair profit, and refrigerators appear to be headed in the same direction. This situation is largely the result of progressively foolish trade-in allowances by competitive dealers.

"Dealer 'A' allows \$5 for a worthless radio and dealer 'B' not to be outdone, allows \$10; or perhaps the prospect tells dealer 'B' that dealer 'A' has offered him an allowance of \$5 when he hasn't at all, and to make the sale, dealer 'B' increases the allowance. Good shoppers propagate the epidemic rapidly to the point where the sale of any radio is a profitless enterprise.

"Manufacturers in their efforts to secure additional retail outlets require too little evidence of a dealer's intention to merchandise on a sound basis. It is frequently the inexperienced dealer who is responsible for an epidemic of trade-ins.

"The hardware dealer, for example, is usually satisfied with a small net profit on each transaction and when he enters the specialty field, he fails to realize that a much larger spread must be maintained between selling price and cost. Before he has learned from experience all of the elements which make up his cost of merchandising he has foolishly indulged in excessive trade-in allowances.

"Many dealers subscribe to the policy of an excessive markup in order to make room for trading. This policy has been proven fallacious, and most reputable manufacturers insist that their dealers maintain published list-prices.

"Prospective customers naturally urge trade-in allowances. Even though they know that the article they want to trade in is useless, they are reluctant to discard something for which they originally paid a good price.

fair valuation of the old car.

"In the early days of electric refrigeration, Refrigeration Bureaus were quite successful in persuading competitive dealers to avoid the pitfalls of excessive trade-in allowances. These Bureaus functioned as clearing houses for airing disputes between competitive dealers.

"Where successful, Refrigeration Bureaus brought in for round table discussion actual transactions which appeared to be contrary to the interests of the dealers as a group. In the early years this was possible since electric refrigerators were sold primarily by specialty selling organizations; in later years, however, sales outlets have increased greatly and it is extremely difficult—in fact, practically impossible, to secure majority representation in the formation of such a Bureau.

"Nevertheless, the need is greater than ever, and, as a pacemaker in the promotion of electrical appliances, our company should make every effort to assist dealers in breaking the present deadlock which threatens their ability to carry on profitably."

Refrigeration in Fore At Denver Home Show

DENVER—Refrigeration played a large part in the annual Home Furnishings Style Revue held by Denver Dry Goods store from Sept. 21 to 23.

Among new refrigerator models displayed were Grunow, General Electric, Stewart-Warner, and Frigidaire. Glass-enclosed mechanism demonstrations and large charts showing comparative values of electric refrigerators and ice boxes were included in the refrigeration display. Short talks were made by Mr. Hill, head of the store's appliance department.

Samples of Frigidaire-made ice cream were offered the revue's visitors.

The cream was made by 7-year-old Barbara Jenkins, Denver culinary prodigy.

Publicity was given to the refrigeration angle of the revue through newspapers, radio broadcasts, and a builders' listing magazine. More than 3,500 visitors attended the show.

Devlin Named to New Universal Post

DETROIT—William A. Devlin, one of the pioneer production men in the electric refrigeration industry, has been named to head the newly created post of supervisor of quality for all products manufactured by Universal Cooler Corp., according to Frank S. McNeal, president.

This addition to Universal Cooler's staff has been made to maintain the company's standards of quality while keeping pace with increased volume of production, Mr. McNeal said. In his new post, Mr. Devlin will report directly to the management.

Mr. Devlin first entered the refrigeration field in 1921 as chief inspector for Frigidaire Corp. He held similar posts at Nizer Corp. and Kelvinator before coming to Universal Cooler as factory superintendent in 1935.

For the past year, Mr. Devlin has been national service manager for the Emerson Electric Mfg. Co., St. Louis.

Coming Next Month! COMPLETE AMAZING DETAILS ON THE NEW 1938 STEWART-WARNER

WITH THE MOST STARTLING PROOF OF PERFORMANCE IN REFRIGERATOR HISTORY

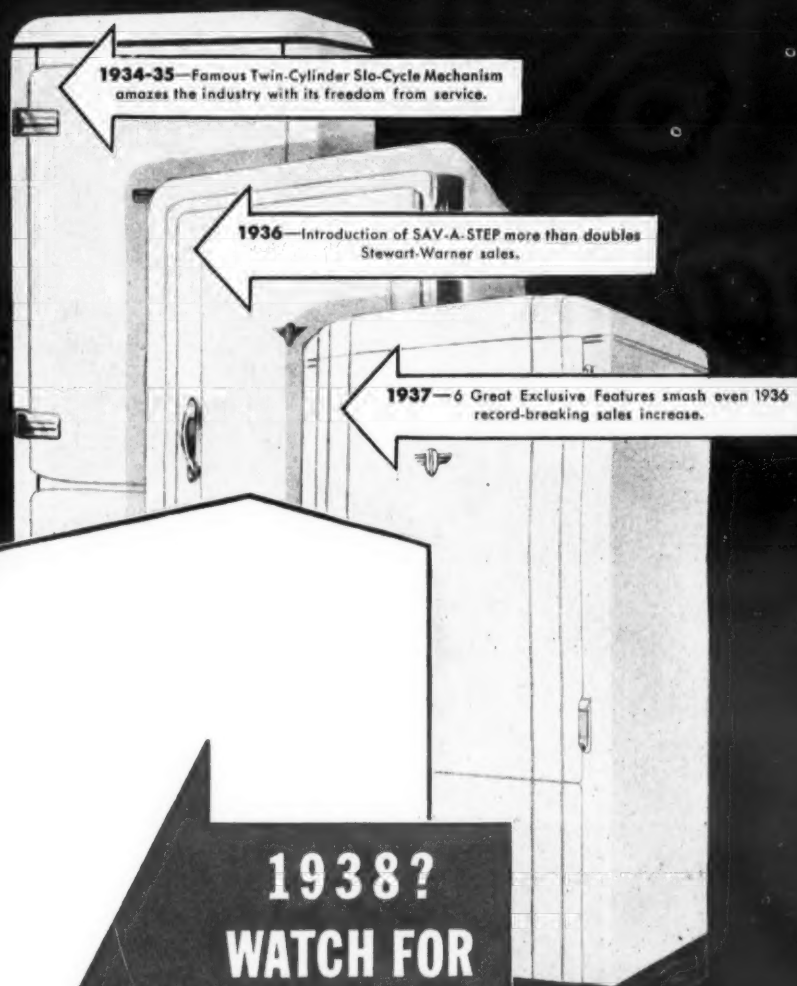
YES, it's coming, and it's all you've hoped for and more—this news of an even better, even more salable Stewart-Warner refrigerator for 1938!

Added to all the record-breaking sales builders of 1937—SAV-A-STEP, SLID-A-TRAY, famed SLO-CYCLE mechanism and others—are new features just as advanced . . .

PLUS An Utterly New Development

. . . an astounding new sales-clincher which we wouldn't dare to introduce if Stewart-Warner trouble-free mechanical performance were anything less than it is!

The great new 1938 Stewart-Warner line is in production right now! And remember—it has everything you've learned to expect in Stewart-Warner Refrigerators . . . PLUS the greatest single talking point ever seen on any refrigerator!



1938?
WATCH FOR
THE FRONT
PAGE NEWS!

Table 2—Typical Operating Ratios of 415 Appliance Stores in 1936

Size of Concern (1936 Sales in Thousands of Dollars)		1 to 10		10 to 20		20 to 30		30 to 50		50 to 100	
Size of Town (1930 Census in Thousands)		All	Under 20	20 to 100	100 & Over	Under 20	20 to 100	100 & Over	Under 20	20 to 100	100 & Over
1	(a) Number of Concerns Reporting.....	61	61	15	21	40	17	17	48	20	26
(b)	Profitable Concerns, % of Total No....	39	74	80	67	83	71	47	71	60	59
Profit and Loss Statement (in Percentages of Net Sales):											
2	Cost of Goods Sold	60.1	65.6	58.5	60.0	63.5	61.7	66.3	67.2	64.1	66.1
3	Overhead Expense: Total.....	36.5	26.6	35.5	31.2	29.2	35.3	33.7	27.3	31.2	29.2
(a)	Salaries of Owners and Officers.....	20.2	9.5	12.1	11.7	9.0	9.8	12.0	7.0	7.0	6.7
(b)	Salaries and Wages of Employees.....	7.5	5.9	8.2	5.3	8.7	11.9	8.8	10.7	8.8	12.6
(c)	Rent	3.2	2.1	2.6	3.6	2.3	2.2	1.9	1.6	1.8	2.4
(d)	Advertising	1.5	1.1	1.6	1.7	1.1	2.2	2.0	1.2	2.1	1.6
(e)	Light and Heat	1.5	0.7	0.7	1.2	0.7	0.7	0.7	0.7	0.9	0.8
(f)	Taxes	0.6	0.2	0.4	0.5	0.5	0.3	0.2	0.4	0.5	0.3
(g)	Bad Debts	0.7	0.4	1.8	0.6	0.5	0.8	0.4	0.5	0.4	0.2
(h)	All other Expense	1.3	6.7	8.1	6.6	6.4	7.4	7.7	5.2	11.7	6.6
4	Profit (or Loss)	3.4	7.8	6.0	8.8	7.3	3.0	0.0	5.5	2.7	5.6
Merchandise Ratios:											
5	Gross Margin (Percent of Net Sales)...	39.9	34.4	41.5	40.0	36.5	38.3	33.7	32.8	35.9	33.9
6	Realized Mark-up (Percent of Cost)...	66.5	52.5	71.0	66.8	57.6	62.2	50.9	48.9	56.1	51.4
7	Inventory Turnover (Times per Year)...	3.4	4.2	5.6	4.1	4.6	4.6	7.0	5.0	5.7	7.1
8	Ratio—Net Sales to Closing Inventory...	5.7	6.4	9.6	6.8	7.2	7.5	10.6	7.4	8.9	10.7
Other Information:											
9	Typical % Change in Sales 1935-36.....	+29.7	+40.8	+33.3	+44.5	+29.2	+18.6	+23.2	+30.2	+18.9	+30.4
		+25.2	+32.1	+35.3							

Table 3—Operating Ratios of 277 Profitable Appliance Stores in 1936

Size of Concern (1936 Sales in Thousands of Dollars)		2 to 10	10 to 20			20 to 30			30 to 50			50 to 100		
Size of Town (1930 Census in Thousands)		All	Under 20	20 to 100	100 & Over	Under 20	20 to 100	100 & Over	Under 20	20 to 100	100 & Over	Under 20	20 to 100	100 & Over
1	Number of Concerns Reporting	24	45	12	14	33	12	8	34	12	10	20	17	18
Profit and Loss Statement (in Percentages of Net Sales):														
2	Cost of Goods Sold	60.1	63.7	54.6	58.2	61.8	60.2	63.3	65.0	60.6	65.1	64.2	62.6	65.9
3	Overhead Expense: Total	31.3	25.0	33.7	30.1	28.0	34.2	31.8	26.2	31.1	30.5	28.8	30.3	29.5
(a)	Salaries of Owners and Officers	20.2	9.5	12.1	11.6	9.0	9.0	....	7.0	7.0	5.2	5.5	5.9	6.0
(b)	Salaries and Wages of Employees	3.0	5.8	7.5	6.8	8.7	11.9	....	9.6	9.9	12.6	12.5	10.2	11.4
(c)	Rent	3.1	2.0	2.6	3.3	2.3	2.2	....	1.6	2.2	1.8	1.7	1.7	1.8
(d)	Advertising	1.2	1.1	1.7	0.9	1.0	2.2	....	1.2	2.3	1.4	1.3	2.6	1.6
(e)	Light and Heat	1.4	0.7	0.7	1.4	0.7	0.6	....	0.6	0.8	0.7	0.6	0.6	0.6
(f)	Taxes	0.9	0.2	0.2	0.4	0.6	0.3	....	0.3	0.5	0.1	0.6	0.2	0.4
(g)	Bad Debts	0.4	0.6	0.7	0.7	0.4	0.6	....	0.5	0.4	0.2	0.7	0.5	1.0
(h)	All Other Expense	1.1	5.1	8.2	5.0	5.3	7.4	....	5.4	8.0	8.5	5.9	8.6	6.7
4	Profit (or Loss)	8.6	11.3	11.7	11.7	10.2	5.6	4.9	8.8	8.3	4.4	7.0	7.1	4.6
Merchandise Ratios:														
5	Gross Margin (Percent of Net Sales)...	39.9	36.3	45.4	41.8	38.2	39.8	36.7	35.0	39.4	34.9	35.8	37.4	34.1
6	Realized Mark-up (Percent of Cost)....	66.5	57.1	83.3	71.9	61.9	66.2	58.1	53.9	65.1	53.7	55.8	58.8	51.8
7	Inventory Turnover (Times per Year)...	2.9	4.0	6.2	4.3	4.6	4.5	7.0	5.0	5.9	7.8	6.1	6.2	8.2
8	Ratio—Net Sales to Closing Inventory..	4.8	6.3	11.4	7.4	7.4	7.5	11.1	7.7	9.7	12.0	9.5	9.9	12.4
Other Information:														
9	Typical % Change in Sales 1935-36.....	+29.7	+38.1	+49.0	+28.5	+26.3	+21.1	+51.5	+36.6	+23.2	+33.7	24.7	+35.3	+47.3

Check these 5 points when you buy insulation

You'll find Armstrong's
Corkboard scores high on all five

SOME insulating materials offer one outstanding advantage. Others may give you a different feature. But when you find one material which combines in itself all desirable qualities, that's the one to use to insulate your cold rooms and equipment. And that's why Armstrong's Corkboard has been standard insulation in low temperature work for more than thirty years.

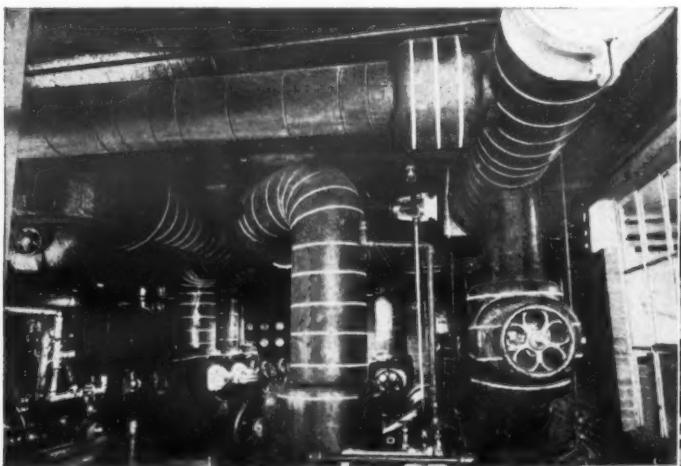
Armstrong's Corkboard meets every requirement for low temperature insulation. Impartial tests prove that its thermal con-

ductivity is low—it presents an effective barrier to the passage of heat. Cork has great natural resistance to the moisture that is invariably encountered in low temperature insulation work. Armstrong's Corkboard is definitely a fire-retardant. There is ample structural strength in this rigid insulation. And finally, many installations of Armstrong's Corkboard which are still in use after more than 30 years of service show that this material assures long insulating efficiency.

Before you buy insulation,

- 1 Conductivity
- 2 Moisture Resistance
- 3 Fire Resistance
- 4 Strength
- 5 Permanence

check all five of these points. See just what Armstrong's Corkboard (and Cork Covering for cold lines) offer you. And find out about the Armstrong Contract Service, which assures effective installation by experienced workmen. For complete details and samples, write to Armstrong Cork Products Company, Building Materials Div., 1002 Concord Street, Lancaster, Penna.



ABOVE: Cold lines operating at -15° F. in a large Eastern oil refinery are insulated with Armstrong's Cork Covering for refrigerating economy and control.

RIGHT: Atlas Beverage Company, Kansas City, insulated floor, walls and ceiling of this beer cooler with corkboard. Note use of Armstrong's Mastic Finish Corkboard on ceiling.



Armstrong's CORKBOARD INSULATION

CORK COVERING FOR COLD LINES • INSULATION SUNDRIES

Lower Operating Cost and Higher Mark-up Distinguishing Traits of Profit-Making Dealers, Dun & Bradstreet Survey Shows

NEW YORK CITY—Of the 415 electric and gas household appliance stores who reported their 1936 operating experiences for the Dun & Bradstreet research and statistical division's annual survey of operating averages, two-thirds, or 277 stores, showed a profit for the period.

Difference between profitable concerns and all those reporting for the survey (see Table 1) seemed to be that profitable stores kept total overhead operating expense lower, and showed a higher realized mark-up than the average for all reporting firms.

For profitable concerns the cost of goods sold averaged 62.8%, compared with 64.3% for all stores; their operating expense (total) averaged 29.7% compared with 31% for all stores; and their realized mark-up (% of cost) average was 59.3% compared with 55.6% for all reporting stores.

Average gain in sales during 1936 over 1935 was 30.7% for all stores. This compares with an average gain of 1935 sales over 1934 of 21.1%, as reported by 311 similar concerns surveyed last year.

Inventory turnover of the electric and gas appliance stores surveyed varied in proportion to the size of the city in which they were located, and the amount of business which they transacted annually (Table 2). Average inventory turnover reported by all stores for 1936 was 5.0, compared with 4.7 for 1935.

DATA ON "TIME" SALES

Only 14 of the stores surveyed operated on a "cash" basis (selling more than 90% of goods for cash); seven of them reported operating at a profit for the year. However, 293 of the 415 concerns did business on open credit, and reported that this averaged 18% of their sales; while 327 stores reported that they sold on instalment, and estimated that this averaged 60% of their total sales.

In separate reports covering the 1936 operations of 216 household appliance stores which did 50% or more instalment business, and 49 stores which did more than 50% open credit business, 142 of the instalment selling concerns and 36 of the open credit firms reported a profit for the year.

The instalment selling stores covered in the separate survey made an average of 70% of their 1936 sales on this basis. One hundred and sixty-one of the 216 stores surveyed also sold on open credit, this type of selling averaging 10% of their business.

The 49 open credit stores reported an average of 67% of their last year's sales were made through this method. Thirty-one of them also sold on instalment, and reported that this made up an average of 20% of their 1936 sales.

In general, instalment selling stores

showed a higher percentage for cost of goods sold and a lower percentage of realized mark-up than did open credit stores. Overhead expense was higher in the open credit concerns.

Cost of goods sold averaged 65.2% for instalment stores, compared with 59.4% for open credit stores; realized mark-up (% of cost) was 53.4% for instalment concerns, against 68.4% for open credit firms; overhead expense was 34% for open credit stores, compared with 30.1% for instalment concerns.

Instalment stores also showed a slightly higher percentage of gain in business compared with 1935 than did credit stores. In this respect, instalment firms reported an average gain of 32.3%, compared with 30.4% for open credit stores.

REFRIGERATOR RETAILERS

Because only 12 retailers of refrigerators alone reported for this year's survey, no separate breakdown of profitable firms was made, although 10 of the 12 showed a profit for 1936. Aggregate net sales of the firms reporting for 1936 were \$1,766,400, an average net of \$31,900, as compared with an aggregate of \$1,007,200 and an average net of \$15,600 for the 28 concerns surveyed for 1935. (See Table 4).

The small number of refrigerator concerns reporting for the year is probably accounted for by the fact that many of the firms formerly selling only refrigerators have broadened their line to include radios and other gas and electric household appliances, it is stated.

Compared with averages for the 28 concerns reporting for 1935, those covered in the latest report show lower cost of goods sold (62.3% against 63.6%), lower overhead expense (30.4% compared with 35%), higher gross margin in percentage of net sales (37.7% against 36.4%), higher realized mark-up (60.6% against 51.3%) and higher inventory turnover per year (5 times compared with 4).

Average gain in sales over the previous year for all stores was 50.2%, compared with a gain of 13.2% reported by the 28 similar firms surveyed on their 1935 business.

Six of the 12 refrigerator stores reported selling on open credit, and said this averaged 23% of their business; nine of them said they sold on instalment, and reported that this amounted to an average of 70% of their 1936 sales. This last figure compares with an average of 45% for instalment sales reported by 21 firms selling on that plan during 1935.

Twenty-one oil burner and stoker concerns reported for this year's survey, as compared with 11 for last year's. Of this year's reporting firms, (Concluded on Page 7, Column 3)

Tulsa Prefers

Refrigeration

For Air Conditioning

And proves it with this array of fine buildings, recently Frick-equipped.

These jobs include several "firsts" in Tulsa, also the largest air conditioning contract ever let in the Southwest, requiring over 1000 tons of refrigeration.

Get literature and prices now on Frick Refrigeration to meet your exact needs.

DEPENDABLE REFRIGERATION SINCE 1882

Frick Co.

WAYNESBORO, PENNA. U.S.A.

**Table 1—415 Gas & Electric Appliance Stores
Report Financial Experiences for 1936**

	All Concerns 1935*	1936	Profitable Concerns 1936
1 (a) Number of Concerns Reporting.....	311	415**	277
(b) Aggregate Net Sales	\$11,408,300	\$15,604,400	\$11,277,700
(c) Typical Net Sales	19,900	25,000	26,500
Profit and Loss Statement (in percentages of Net Sales):			
2 Cost of Goods Sold	63.0%	64.3%	62.8%
3 Overhead Expense: Total	32.9%	31.0%	29.7%
(a) Salaries of Owners and Officers	10.1%	8.9%	8.6%
(b) Salaries and Wages of Employees	9.6%	9.8%	9.6%
(c) Rent	2.4%	2.0%	2.0%
(d) Advertising	1.5%	1.4%	1.3%
(e) Light and Heat	0.9%	0.7%	0.7%
(f) Taxes	0.5%	0.4%	0.4%
(g) Bad Debts	0.9%	0.6%	0.6%
(h) All Other Expense	7.9%	7.2%	6.5%
4 Profit (or Loss)	4.1%	4.7%	7.5%
Merchandise Ratios:			
5 Gross Margin (Percent of Net Sales).....	37.0%	35.7%	37.2%
Usual Range (a) Upper Limit	44.0%	43.6%	44.0%
of Experience (b) Lower Limit	31.1%	30.5%	32.5%
6 Realized Mark-up (Percent of Cost).....	58.8%	55.6%	59.3%
7 Inventory Turnover (Times per Year)	4.7	5.0	5.1
Usual Range (a) Upper Limit	7.6	7.6	7.6
of Experience (b) Lower Limit	3.2	3.3	3.4
8 Ratio—Net Sales to Closing Inventory.....	7.4	7.8	8.1
Other Information:			
9 Typical Percent Change:			
(a) in Sales from previous year (+ or -).....	+21.1%	+30.7%	+32.1%
(b) in Inventory during the year (+ or -).....	+25.0%	+20.1%	+23.7%
10 Credit Policies:			
(a) Number of "Cash" Concerns (over 90% Cash)...	13	14	7
(b) Number of Concerns Selling on Open Credit...	228	293	196
(c) Their Typical Proportion of Credit Sales...	20%	18%	20%
(d) Number of Concerns Selling on Instalment...	248	327	250
(e) Their Typical Proportion of Instalment Sales	50%	60%	60%

*NOTE: Details of these 1935 operating figures will be found in Tables II and III of last year's Retail Survey. (Published in Sept. 30, 1936, issue of Air Conditioning and Refrigeration News.)

**This group of reporting concerns includes stores which sell some radios and refrigerators as well as other electric and gas household appliances.

Table 4—Experiences of 12 Refrigerator Dealers

	All Concerns Reporting 1935*	Profitable Concerns 1936
1 (a) Number of Concerns Reporting.....	28	12†
(b) Aggregate Net Sales	\$1,007,200	\$1,766,400
(c) Typical Net Sales	15,600	31,900
Profit and Loss Statement (in percentages of Net Sales):		
2 Cost of Goods Sold	63.6%	62.3%
3 Overhead Expense: Total	35.0%	30.4%
(a) Salaries of Owners and Officers	8.8%	8.1%
(b) Salaries and Wages of Employees	9.8%	11.9%
(c) Rent	2.1%	2.2%
(d) Advertising	1.2%	0.7%
(e) Light and Heat	0.6%	0.6%
(f) Taxes	0.6%	0.5%
(g) Bad Debts	11.9%	6.0%
(h) All Other Expense	1.4%	7.3%
4 Profit (or Loss)	1.4%	7.3%
Merchandise Ratios:		
5 Gross Margin (Percent of Net Sales).....	36.4%	37.7%
Usual Range (a) Upper Limit	62.4%	41.0%
of Experience (b) Lower Limit	26.7%	32.9%
6 Realized Mark-up (Percent of Cost).....	57.3%	60.6%
7 Inventory Turnover (Times per Year)	4.0	5.0
Usual Range (a) Upper Limit	6.5	6.8
of Experience (b) Lower Limit	2.2	2.7
8 Ratio—Net Sales to Closing Inventory.....	7.2	8.0
Other Information:		
9 Typical Percent Change:		
(a) in Sales from previous year (+ or -).....	+13.2%	+50.2%
(b) in Inventory during the year (+ or -).....	+25.0%	+29.0%
10 Credit Policies:		
(a) Number of "Cash" Concerns (over 90% Cash)...	1	0
(b) Number of Concerns Selling on Open Credit...	20	6
(c) Their Typical Proportion of Credit Sales...	25%	23%
(d) Number of Concerns Selling on Instalment...	21	9
(e) Their Typical Proportion of Instalment Sales	45%	70%

*NOTE: Details of these 1935 operating figures will be found in Tables II and III of last year's Retail Survey.

†The small number of concerns reporting this year is probably accounted for by the fact that many of the concerns formerly selling refrigerators have broadened their line to include radios, and/or other gas and electric household appliances. (See also survey No. 47). Also, for the same reason, it was inadvisable to show a breakdown of profitable concerns separately.

**Table 5—Operating Ratios of 21 Oil Burner and
Stoker Dealers**

	All Concerns 1935*	1936	Profitable Concerns 1936
1 (a) Number of Concerns Reporting.....	11	21	16
(b) Aggregate Net Sales	\$383,900	\$1,300,700	\$1,189,100
(c) Typical Net Sales	19,300	43,000	44,500
Profit and Loss Statement (in percentages of Net Sales):			
2 Cost of Goods Sold	53.9%	57.7%	57.1%
3 Overhead Expense: Total**	44.7%	37.2%	35.3%
(a) Salaries of Owners and Officers	9.5%	9.7%	9.7%
(b) Salaries and Wages of Employees	13.9%	16.2%	11.5%
(c) Rent	3.4%	1.3%	1.3%
(d) Advertising	1.2%	1.0%	1.5%
(e) Light and Heat	0.8%	0.3%	0.3%
(f) Taxes	0.6%	0.7%	0.7%
(g) Bad Debts	15.3%	0.5%	0.5%
(h) All Other Expense	1.4%	7.5%	9.8%
4 Profit (or Loss)	1.4%	5.1%	7.6%
Merchandise Ratios:			
5 Gross Margin (Percent of Net Sales).....	46.1%	42.3%	42.9%
Usual Range (a) Upper Limit	48.0%	47.9%	47.9%
of Experience (b) Lower Limit	36.5%	36.1%	36.1%
6 Realized Mark-up (Percent of Cost).....	85.7%	73.4%	75.2%
7 Inventory Turnover (Times per Year)	5.8	10.9	12.5
Usual Range (a) Upper Limit	7.4	14.8	15.4
of Experience (b) Lower Limit	3.2	5.1	9.5
8 Ratio—Net Sales to Closing Inventory.....	10.7	18.9	21.9
Other Information:			
9 Typical Percent Change:			
(a) in Sales from previous year (+ or -).....	+38.6%	+40.1%	+55.0%
(b) in Inventory during the year (+ or -).....	+27.0%	+13.5%	+13.5%
10 Credit Policies:			
(a) Number of "Cash" Concerns (over 90% Cash)...	2	1	1
(b) Number of Concerns Selling on Open Credit...	9	18	13
(c) Their Typical Proportion of Credit Sales...	20%	50%	50%
(d) Number of Concerns Selling on Instalment...	8	17	13
(e) Their Typical Proportion of Instalment Sales	33%	30%	13%

*NOTE: Details of these 1935 operating figures will be found in Tables II and III of last year's Retail Survey.

**Probably includes some installation expense in addition to usual retailing costs.

Mark-up and Turnover Make Profitable Store

(Concluded from Page 6, Column 5)
16 or about 75%, show a profit for the period covered.

Difference between profitable firms and all reporting concerns appears to be that the former, like profitable appliance firms, show a lower percentage in cost of goods sold, have lower overhead expense, and higher gross margins, realized mark-up, and stock turnover per year than all stores in the class.

Cost of goods sold for all reporting oil burner and stoker firms is 57.7%, compared with 57.1% for the profitable stores only; total overhead expense (probably including some installation expense) is 37.2%, compared with 35.3%; gross margin (1% of net sales) is 42.3%, compared with 42.9%.

Profitable stores show a realized mark-up of 75.2% against 73.4% for all stores, and their inventory turnover was 12.5 times per year compared with 10.9 times for all stores surveyed in the class. Gain of these profitable stores in sales over 1935

was 55%, compared with an average gain of 40.1% for all firms in the group.

Eighteen of the stores (including 13 profitable ones) sell on open credit, their proportion of this type of sales averages 50%, and 17 stores (13 profitable) sell on instalment, their proportion of this kind of business averaging 30%.

Indication that the profitable firms kept a closer check on instalment business is shown by the fact that the 13 profitable stores reporting said that this method of selling averaged only 13% of their total sales.

THE LIGHTWEIGHT ALL-STAMPED STEEL BASE CONTRIBUTES TO **BRUNNER** RUGGEDNESS



Throughout the many years of continuous service built into this Brunner condensing unit, its all-stamped steel base—with no seams to weaken or spread—completes the all-round ruggedness of the unit itself. This particular type of base also safeguards each Brunner unit against breakage in shipment. * * * You'll find some Brunner feature, like this particular one, excelling in every phase of manufacture. Counter-balanced reciprocating parts, for example, machined to close tolerances reduce vibration and wear to a new low... positive "Brunner-seal" insures constant crankcase pressure... special valve-in-head design simplifies valve replacements—these and scores of other Brunner advantages team up to deliver low-cost refrigeration dependably. * * * Let us explain in detail Brunner refrigerating and air conditioning equipment—forty-seven condensing units and five compressor models in a range from ¼ H.P. to 15 H.P. Brunner Manufacturing Co., Utica, N.Y., U. S. A.

BRUNNER

BUILDS FOR *Greater* DEPENDABILITY

SPECIALTY SELLING IDEAS

G-E Stages Football Drive on Laundries

BRIDGEPORT, Conn. — Capitalizing on seasonal interest in football, General Electric's appliance and merchandise department here has opened a 10-week "All-American" drive on home laundry equipment, complete with footballs, headgear, cheering sections, scoreboards, and even a co-ed "heart interest."

The campaign, which began Sept. 13 and will close Nov. 30, offers distributor salesmen a large assortment of merchandise awards, with 110 national and 120 period prizes for achievements in the sale of G-E washers and ironers.

DISTRIBUTOR TRAINING

Under the guidance of a home laundry specialist, a "training camp" for each distributor preceded the opening of the campaign. At the completion of the contest, choice awards will go to the "All-American" team of the 11 leading salesmen nationally.

"Head Coach" John M. Wicht, manager of home laundry sales, has planned "power plays" for the drive including key city newspaper advertising, offer of a free bath towel to prospects getting washer or ironer demonstrations, and new promotional material. A newspaper called "Touch-down" will be published regularly throughout the drive.

SEATTLE TAKES LEAD

First week after the "kick-off," leading scorer was found to be General Electric Supply Corp. of Seattle, led by A. J. Lutz and F. A. Block, with Virginian Electric, of Charleston, W. Va., a close second. After the second week leadership has moved east to Perry-Browne, Inc., of Columbia, S. C.

"Heart interest" in the drive is provided by "Lulu, the All-American Co-ed," devised by Lee Wichelns of the home laundry promotion section. "Lulu" will be rotated among the companies who top the weekly sections of the drive.

Grunow Dealers Will Offer Testimonial Broadcasts

HARTFORD, Conn. — Twenty-six leading dealers of Stern & Co., distributor of Grunow refrigerators and radios, will be saluted on the air in a series of noonday radio broadcasts over station WDRC.

These broadcasts, sponsored by the distributorship, are to be presented from 12:00 to 12:15 on 26 consecutive Tuesdays and Thursdays. Each broadcast will salute a specific dealer, and will be in the form of a testimonial from a retail customer of that dealer.

Stern & Co. will furnish each saluted dealer with a Silux coffee maker, to be presented to the customer furnishing the testimonial. If the customer cannot come to the studio to personally broadcast his testimonial, the dealer may obtain permission to read the testimonial.

In conjunction with the broadcasts, each saluted dealer will be allowed to place advertising in his local newspaper to the extent of \$80. This appropriation must be spread over at least two ads, both of which must be run during the period of the broadcast series and which must bear reference to the broadcasts.

The new radio-newspaper advertising program was announced at a dinner meeting of 30 dealers.

Eisler Opens New Store in New Brunswick, N. J.

NEW BRUNSWICK, N. J. — Andrew Eisler, head of the local appliance dealership which bears his name, has opened an additional store here under the management of Frank Wenzel. This store will feature Westinghouse, Leonard, and Crosley. Mr. Eisler was recently appointed a Westinghouse dealer. His firm also has entered the commercial refrigeration and residential air-conditioning fields.

Friendliness Results In Sales Increase for Boston Negro Dealer

By Robert Wilson

BOSTON—Just by being friendly, Leon G. Lomax, head of South & Electric Inc., Boston's only, and New England's largest, all-colored refrigeration dealership, has raised his sales to such prosperous heights that he has opened a branch establishment deeper into Roxbury—that section of Boston similar to New York's Harlem.

"We don't try to sell refrigerators like Joe Louis tries to win fights," said Mr. Lomax. "We don't use any 'cold' canvassing methods. We just make a lot of friends and try to sell our refrigerators through their influence."

The "incorporated" added on to South and Electric, Mr. Lomax told us, stands for himself, his wife, and his mother. He has been in the refrigerator business for 14 years. Previous to that he was a motion picture camera operator in South Carolina.

He had three partners when he first opened his store, but for the last 10 years he has been alone. He went to an electrical school for three years.

Besides himself and his wife, both of whom sell on the floor in his establishment, Mr. Lomax has four additional salesmen. One of these is a girl. They are all paid by salary. In addition, he pays a commission to two wiring contractors for the sales they make for him.

His sales for 1937, he told us, were up 20%, and the total represented a new high peak for the 14 years he has been in business.

"I couldn't give a reason just why our sales are up so high," he reported, "except that, in the first place, business is better all over."

"And, then, we don't have much competition. We got the only all-colored store around here, and our folks figure 'why not buy from us.'"

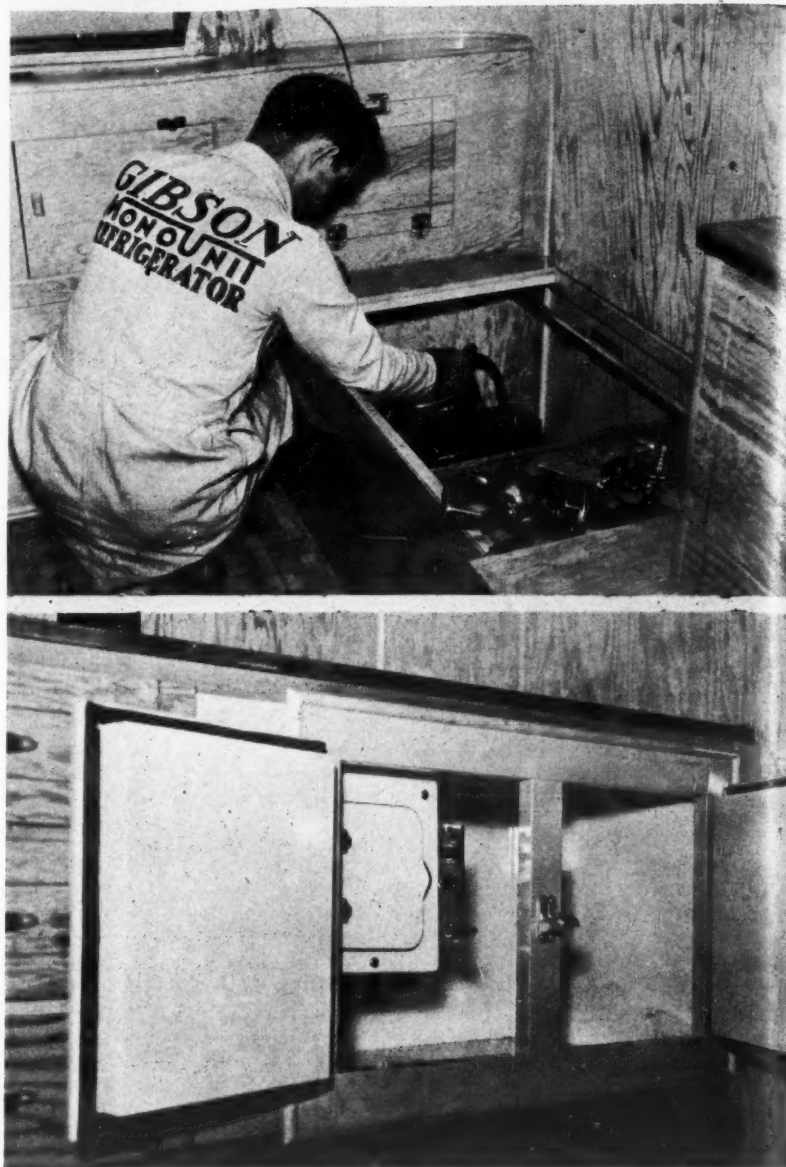
"The main thing I tell my salesmen is, when they're calling on a customer to say, not that they're just selling refrigerators, but that they're from South & Electric. And that means something here in Roxbury."

There are, Mr. Lomax believes, no difficulties involved in selling colored folk that differ from those involved in selling white ones. Rather, if anything, there are advantages.

"You see, there is closer contact among us colored folk. Our salesmen don't have difficulty getting in to see prospects."

"And then, as I say, we don't have much competition. There is a store down the way run by a Jew, with colored salesmen, and another run by a white man, with colored sales-

Making Use of Waste Space in Trailer



In the top picture a service engineer is shown putting the final touches on the installation of a Gibson condensing unit in a trailer. Bottom picture shows the freezing unit in the cabinet compartment.

Refrigerator Built-In Automobile Trailer

GREENVILLE, Mich. — The automobile trailer owned by L. D. Abby, a bridge inspector for the Michigan state highway department, has been equipped with electric refrigeration by Gibson Electric Refrigerator Corp.

The built-in cabinet of the refrigerator, which has a capacity of less than 3 cu. ft., is thickly insulated.

A full heavy-duty 1/2-hp. motor compressor was installed beneath the cabinet. A conventional Gibson U-type freezing unit, constructed entirely of copper, also was installed.

It was found that the temperature of the small food compartment could be lowered so rapidly that food could be placed in the refrigerator when the food compartment was still warm without danger of spoilage.

IS IT SAFE FOR THE SERVICE MAN TO DO



Any service man who has been over the ground knows that more and more of the leading refrigerator manufacturers are standardizing on Cutler-Hammer Refrigerator Control. This fact is doubly important to the man who knows what thorough and exhaustive tests precede such a decision.

And every service man who is trying to establish himself soundly with his customers knows that what is best for the box must be best for him. That is why more and more service men standardize on the same control... Cutler-Hammer Control... for replacement service. It's the only control that gives them the proven features of C-H Design. Write for literature. CUTLER-HAMMER, Inc., Pioneer Manufacturers of Electric Control Apparatus, 1362 St. Paul Ave., Milwaukee, Wis.

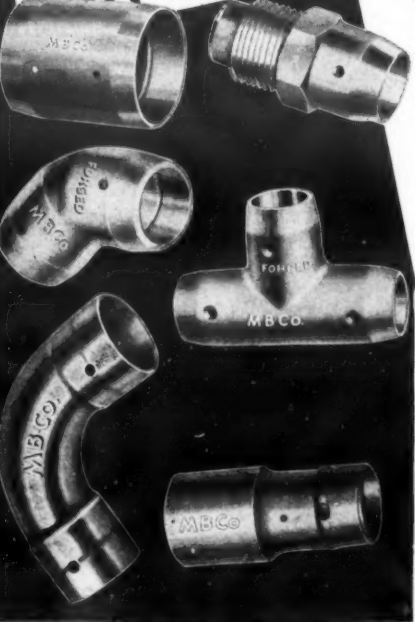


Check These Outstanding Features of C-H Refrigeration Control

- ✓ 4 models meet nearly every need
- ✓ Famous C-H overload protection now available for replacement control
- ✓ C-H settings are dependable, stay the way you set them for years
- ✓ All wanted advantages: cold control; defrost position; adjustable temperature and pressure range; each model fits large or small openings; mounts horizontally or vertically; simple connections.

TOP PERFORMANCE FITTINGS.

FOR REFRIGERATION AND AIR CONDITIONING



The use of STREAMLINE Solder Fittings assures permanently tight connections for electric refrigeration and air conditioning work. They are absolutely refrigerant and seep-proof. Vibration cannot work them loose. They form a connection actually stronger than the tubing — yet much lighter and more quickly completed, and they reduce materially your fitting cost.

Brass Forgings which have a tensile strength of approximately 60,000 pounds per square inch, are used in the manufacture of our flared tees, elbows, valve bodies, etc. Specially treated drawn brass rod is used for integral parts of valves, flare couplings, fitting caps, etc. We manufacture the most complete line of valves, fittings (both flare and solder type) and accessories for mechanical refrigeration work. Send for catalog R-3 and Price List 2003.

MUELLER BRASS CO.
PORT HURON, MICHIGAN

★STREAMLINE COPPER PIPE AND SOLDER FITTINGS

WILL BE WAITING TO SEE YOU AT BOOTH NO. 10—R. S. E. S.

FARM REFRIGERATION

Need for Large Sized, Moderately Priced Refrigerators for Farm Market Is Shown in University Survey

LAFAYETTE, Ind.—Investigations conducted by Indiana's agricultural experiment station at Purdue University have led to the conviction that the country needs "a large size refrigerator, selling at a moderate initial cost, to meet the needs of many farm families."

Under the financial stimulus provided by the federal government, construction of rural power lines is being pushed rapidly into new farming areas. Agricultural leaders, not only in Indiana, but in other states, claim that farmers and farm women have only the vaguest understanding of how to adapt electricity to their needs and little judgment on electrical appliances and what they are good for.

After the problem of lighting the farm home has been settled, farm women usually want to buy next a power washer or a refrigerator, according to Dr. Mary L. Matthews, head of Purdue's home economics department.

To determine the adequacy of available refrigerators to meet the needs of the farm household, the department, with the cooperation of the department of agricultural engineering, conducted a survey which covered 144 rural Indiana homes that have mechanical refrigeration.

The purpose, as outlined by Dr. Matthews, was to obtain information on the adequacy of present refrigerator sizes, sizes of cabinets, whether or not marketable produce is stored in the household refrigerator, the kind and amounts of product stored, ages of boxes, fuel used in cooling them and during how much of the year the refrigerator is operated.

Thirty-six or 25% of the refrigerators were used partially for the storage of marketable produce, such as butter, eggs, cream, poultry, fresh fruits and vegetables, and freshly butchered meats.

The record shows that many women stored from two to 15 gallons of cream regularly, butter in

amounts up to 25 lbs., and 25 to 30 chickens each week. In addition, they store cottage cheese, various kinds of salads, milk, eggs, and fresh meats, either for market or regular customers.

Many of the women, it was found, are forced to remove practically all household foods from their refrigerators prior to market day, to accommodate marketable produce. Many women, it was learned, use their refrigerators during the winter months for storage of freshly butchered meats until used.

G-E Movie Promotes Farm Market for Appliances

CLEVELAND — "Bill Howard, R. F. D." a talking moving picture on rural electrification, has just been released by the General Electric Co.

The movie depicts life in a typical American farm home, first without and then with the advantages of electricity. The son of the farm family, an agricultural college graduate, has gone to the city, married, and become successful in business.

Returning to the farm, the boy and his city-bred wife make many adjustments to fit into the life on a non-electrified farm. How the conservative father, who sticks to old ways, is converted and joins his neighbors in getting a farm line built is the basis of the six-reel film.

Advantages of an electric kitchen, wiring, lighting, home laundry equipment, and radios in the farm home, and of electric milking equipment, milk cooling, electric soil heating, motors, barn lighting, and water pumping are worked into the story.

News Editorial Used To Promote Sales

SIOUX CITY, Iowa—An editorial outlining, in the May 19 issue of AIR CONDITIONING AND REFRIGERATION NEWS, the growing rural market for non-mechanical refrigerators, so pleased one Electrolux distributor that he immediately ordered 100 extra copies of that issue to mail to operators of his retail outlets.

The distributor in the case was E. B. Moles, partner of E. D. Malone and in charge of the Electrolux activities of Malone & Moles, distributor in the Sioux City area for Electrolux refrigerators, Carrier refrigeration and air-conditioning equipment, Pelco beverage coolers, and other electrical and gas appliances.

To insure reading of the editorial, the distributorship had bulletins printed on red cover stock. One of these was clipped to the front page of each of these copies of the NEWS. Text of this bulletin began as follows:

"DON'T READ!—the editorial on page 14 titled: 'Wanted: Oil-Fired Refrigerators'—Unless you want to know why dealers, distributors, and manufacturers all over the world have their eyes on you and every Electrolux dealer."

Farmers, said Mr. Moles, make up the big Electrolux market in the area for which he is responsible. Kerosene operated units now out-sell gas-fired ones by about three to one, he added, because gas is not yet used on most farms.

Many farms, however, have installed bottle gas, Mr. Moles pointed out, and where this is the case the chance of selling an Electrolux is increased because bottle gas companies provide a reduction in the unit price of gas consumption when the gas load is increased by addition of a gas-fired refrigerator.

Tying in both with rural electrification plans and with the expansion of bottle gas use, Electrolux prospects are shown that for an expenditure of \$12 their kerosene units can be altered to use either electricity or gas. In the former case, an electrical heating unit supplants the kerosene burner.

Landmesser Cites Value Of Rural Market as Revenue Builder

CLEVELAND — Rural electrification's importance as a revenue builder to the utility, and as a profit builder to the farmer, was the subject of a talk given by Walter Landmesser, manager of General Electric's commercial refrigeration section, at a meeting of Penn Central Station executives here recently.

"Electrified farms mean investment in electric lines on which a return must be earned through the consumption of power by the farmer," said Mr. Landmesser, before reviewing the electrified farm opportunities open to the utility.

Local ordinances, state laws, and dairy company regulations demand that milk be delivered in wholesome condition by the farmer. To do so, he must cool the milk promptly after milking his herd. Such was Mr. Landmesser's argument for electric milk coolers, which he claimed perform the job faster, cleaner, easier, and cheaper.

"Packaged merchandise takes out the mystery and reduces former difficulties to a minimum," he declared.

Fruit farms, whose products must frequently be sold at the season's peak or rot, offer second major possibility of developing power consumption through rural electrification, he said.

"Where in previous years many farmers stored apples in refrigerated warehouses, now fruit growers are installing their own storage plants equipped with electric refrigeration," he declared.

"The savings, plus the extra profits from high prices pay for the plant in a few years. Every fruit storage plant utilizes large units that consume quantities of current," he reminded his listeners.

Grunow

THERMENE REFRIGERATION

the revolutionary new development in food preservation . . . soon to be displayed by your Grunow Distributor . . . will be

Competitive with
ELECTRIC REFRIGERATION

IN Initial Price
IN Ice Production
IN Operating Costs
IN Sales Features

CHILLED BY

THE FREEZING

FLAME

GENERAL HOUSEHOLD UTILITIES CO.
CHICAGO, ILLINOIS

Norwegian Refrigeration Sales Increase 25% Each Year

90% of Homes Use Electric Cooking; New Commercial Refrigeration Market Is Developed by Dealers

By John Strohm

OSLO, Norway.—Although Norway is the most thinly populated country in Europe, with long underwear weather reigning seven months of the year over a land 71% unproductive, Norwegians are a long ways from the road which leads over the hill to the poorhouse. Ninety per cent of the people eat meals cooked on electric stoves and live better than in any other nation in the world save three or four.

What is more important—to get down to business—refrigeration dealers were unanimous in reporting sales increases varying from 15 to 110% above last year. Electrolux reported this latter healthy figure. (It must have been their slogan which turned the trick in this cold country—"It's summer in the kitchen all the year around.")

CHEAP ELECTRICITY

An intelligent people who realize their need for refrigeration and who have the money to buy it; an abundance of cheap electricity; and keen competition on the part of the dealers—that, in brief, is the story of why refrigeration sales have in-

creased more than 25% every year since 1933, the depression upturn.

The major volume of business is in the commercial field although domestic sales are steadily creeping up in turn-over value. Commercial refrigeration got its big stimulus about three years ago for these reasons: it became an absolute necessity if butchers and other food merchants were to meet the keen competition; losses from spoiled food had been heavy during the short but warm summers; and the government required milk dealers to cool milk, and passed other similar restrictions in the interests of health.

Major commercial business is divided between butcher shops, food stores, dairies, and shops.

DEVELOP NEW CUSTOMERS

Although these markets are by no means saturated, other dealers have pioneered and developed new customers. Kjoleinstallator has gone after the silver fox farm operators. These farmers are now completely sold on refrigeration as an aid in preserving and beautifying the al-

ready beautiful—and expensive—pelts.

Another market which shows great promise is the cold rooms for storing fruits and fish. The government is subsidizing a few air-conditioned cold rooms for fruits in an effort to stimulate their construction.

"Why buy apples from foreign countries when we can eat Norwegian apples?" is the reasoning behind this move.

Ice cream is consumed in small quantities, almost wholly in the summer time. The consumption is growing slowly as adults get over the idea it isn't merely a child's palate teaser with the social status of a penny sucker.

Dealers in commercial refrigeration import only the machinery and parts, and build their cabinets, locally.

20,000 UNITS IN 3 YEARS

With an estimated 20,000 units in Norway sold mostly during the past three years, dealers predict an increasing market for household refrigerators as the people come to regard them as a necessity. The equipping of all new apartment houses with built-in cooling systems opened up a new outlet, of which Electrolux has captured almost 80%.

Some of the companies, notably Frigidaire, are carrying on educational campaigns. Frigidaire points out the common sense value of refrigeration and also urges it as a sound investment when money is

In the Land of Long Underwear

Wintry winds blow seven months out of 12 in Norway, writes John Strohm in the current episode of his study of foreign refrigeration and air-conditioning markets for AIR CONDITIONING AND REFRIGERATION NEWS, but that hasn't kept refrigerator sales from increasing an average of 25% annually for the last three years.

Present and prospective markets for household and commercial refrigeration equipment and air conditioning are outlined by Mr. Strohm in interviews with important Norwegian factors.

plentiful. Dealers reported low temperatures in March, April, and May cut down domestic sales this year.

As yet little has been done with air conditioning in Norway, although Carrier has made a few installations with cold water. However, increased inquiries from potential buyers indicate a definite demand for it is growing.

Factories, schools, theaters, and "places where people gather in numbers," have been assigned as the most likely market. Schools were especially singled out because the government is proud of its school system and will do anything to improve it, according to Norge officials.

The government has recently granted subsidies for the construction of air-conditioned rooms for fruit and fish storage. There is every likelihood this market will increase rapidly with government encouragement.

AIR CONDITIONING

Factors retarding the present sale of air-conditioning equipment are cool climate, lack of moisture, high cost, and lack of experience.

"We've had inquiries, but we don't know anything about it," was one of the answers given.

Customs duties average 18% on refrigeration equipment and household appliances, and 10% on electric motors. Cabinets are assessed at the rate of .65 kronin per kilo (about 8 cents per pound).

A stimulus to the sale of refrigeration and household appliances has been the abundance of cheap electric current available everywhere—Norway has more electricity per capita than any other country in the world.

She has a potential hydro-electric power estimated at 12 million horsepower, of which only 1½ million has been developed. Rates are based upon

the size of the building, and the volume the occupant agrees to use.

INSPECTION OF IMPORTS

Jealous of its knowledge of electricity, Norway has established an electric control board, "Norges Elektriske Materialkontroll," for short. Its job is to inspect all electrical equipment coming into the country, test it, and make certain it comes up to Norwegian standards.

The importer pays a fee of 40 kronin (one kronin—approximately 25 cents) for the inspection of refrigerators, washing machines, and electric stoves; 20 kronin for other appliances. In addition refrigerator importers must pay a tax of one-third per cent of their gross sales in retail price while importers of radios must pay one-fourth per cent of their sales. This money goes to support the control board.

Foreign manufacturers must have representatives in Norway to act as exclusive agents, responsible for reporting sales and paying sales and testing fees on approved equipment.

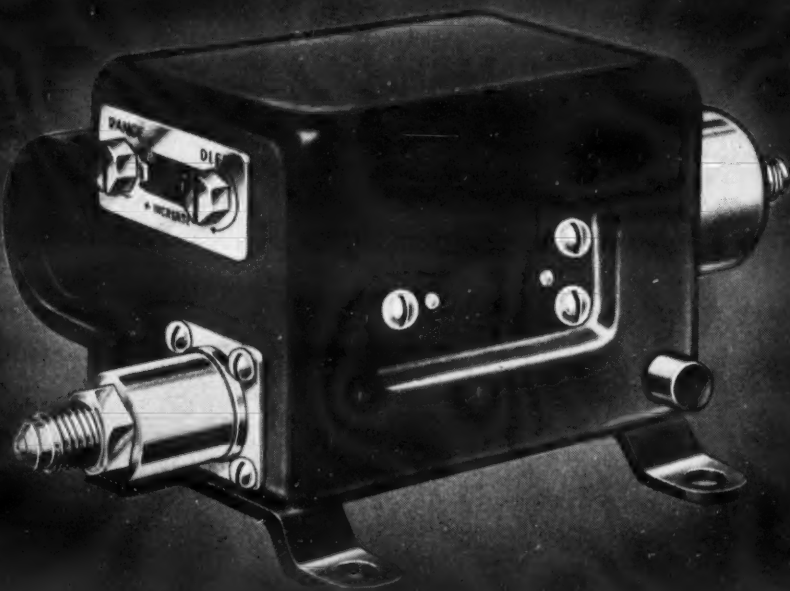
Dealers are divided as to the value of the control board. Some said it weeded out inferior products and eliminated cheap competition. Others voiced the opinion it merely raised the price of the refrigerator, and caused importers trouble in unpacking and making minor changes in wiring instead of shipping the units directly to the sub-dealers.

Most common faults the board's testers have to find with American equipment are not sufficient clearance between the live and ground wires, and too porous bakelite material.

The testers take great glee in trying to break down American equipment, putting them through abusive and exhaustive tests, according to one authority who told of an incident

(Concluded on Page 11, Column 1)

Out of Years of Leadership...

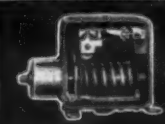


COME

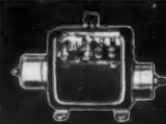
PENN

REFRIGERATION CONTROLS THAT
ARE TODAY, AS IN THE PAST,
UNSURPASSED FOR PERFORMANCE
AND DEPENDABILITY

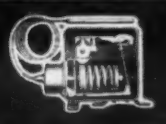
SERVICE SAVINGS PAY THE DIFFERENCE



Type L Model LP Low Side Pressure Control



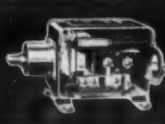
Type LSC Model LSCP Dual Pressure Control With Thermal Overload



Type L Model LT Temperature Control



Type 203 Low Side Pressure Control



Type 209 Dual Pressure Control—With Thermal Overload



Type 213 Temperature Control

Our reputation for unfailing refrigeration control devices was founded on the world famous Penn Type L line pictured above.

The new "200 Line" of controls shown above met mass production problems of national manufacturers seeking short cuts in costs.

PENN ELECTRIC SWITCH CO.

OFFICES: New York, Boston, Detroit, Dayton, Moline, Chicago. EXPORT: 100 Varick St., N. Y. C. Distributors in Principal Cities. REPRESENTATIVES: Garland-Affolter Engr. Corp., San Francisco, Seattle, Portland, Los Angeles; Forlund Pump and Machinery Co., Kansas City; The Uhl Co., Minneapolis; Jules Beneke, St. Louis; Monarch Sales, Denver.

Now located in GOSHEN, INDIANA

Quality

KNOWS NO COMPETITION!

The HILL all-porcelain Reach-in Refrigerator for commercial use is made in only one quality—the BEST. All-porcelain, inside and out, gracefully proportioned, free from exposed nuts or bolts, equipped with improved hardware, built with an accessible coil door, and insulated with the best sheet corkboard, waterproofed.

Send for 28-page illustrated catalog and discounts, using your business letterhead.

C. V. HILL & CO., Inc.
Trenton, New Jersey

Electrolux with 1 and 1½-Cu. Ft. Boxes Makes Majority of Sales in Norway

(Concluded from Page 10, Column 5)
where water was boiled inside a refrigerator cabinet. He added that American equipment always stood up.

15 MAKES SOLD

Although there are about 15 makes represented in Norway, the bulk of the business is done by the top five—Frigidaire, Electrolux, Norge, Kelvinator, and Westinghouse. Frigidaire leads in the sale of commercial equipment with Norge and Kelvinator pressing closely. Vigorous progress is also being shown by Kjøleinstallator, a newcomer specializing in commercial installations with Linde and Baker equipment.

Electrolux, according to its own estimate, controls 50% of the domestic business and makes 80% of the apartment house installations. Frigidaire, Westinghouse, and Norge also do good business.

Several other American makes are represented on a small scale; DKW, ATE, and Siemens come in from Germany; and Danish concerns make a few sales. There are but two Norwegian firms, Drammens and Kaverne, the latter manufacturing all sizes of compressors.

POPULATION THREE MILLION

Less than three million people live in this country, a considerable part of which lies north of the Arctic circle. Only 6% of the land is fit for cultivation, and 23% is covered with forests. The rest is as unproductive for growing foodstuffs as a gravel pit. Nevertheless, Norway is one of the most progressive nations and has one of the highest standards of living in Europe.

The people are level-headed, intelligent, industrious, and know the value of cooperation. Tycoons are scarce and poor people are practically nil. Wages are high and the purchasing power is steadily increasing.

And Norwegians are spending their money, confident of the future. They are different from their Danish cousins who think twice before letting go of a coin, then put it back in their pockets.

In social legislation Norway, along with other Scandinavian countries, is a procession leader. Old age pensions and sick benefit and unemployment insurance have been in effect many years.

Oslo, the capital and largest city, has a population of 350,000 and an excellent ice-free harbor. Other chief cities are Bergen, Trondheim, Stavanger, Drammen, and Kristiansand. The standard of living in all is very high since heavy duties make imported foodstuffs and clothing expensive.

Principal industries are shipping and shipbuilding; wood pulp and paper manufacturing; preserving, drying, and canning of fish; electrochemical and electro-metallurgical industries producing nitrates, calcium carbide, aluminum, nickel, and ferroalloys; and mining, chiefly pyrites and iron ore.

Electrolux Best Sellers Have Been Small-Sized Units

Ample purchasing power of the people coupled with a saleable product accounts for the 110% increase in Electrolux sales from January to July over the same period last year, according to H. Stig, president.

"The market is good and we expect it to continue to be good—we don't fear competition will keep us from getting our share of the business," he declared.

Electrolux has been established for 12 years in Norway, but the big volume of sales has been made within the last three years. He estimated Electrolux controlled 50% of the household market and 80% of the apartment house installations.

"We never use salesmen, we let the product sell itself," he said. Their best sellers have been boxes of 1½ and 3 cu. ft. capacity, although in small flats they install 1 or 1½-cu. ft. boxes. They sell many cubic foot units, but the people are now demanding a bigger size.

"People bought 8 and 10-cu. ft. boxes when refrigerators first came out. Then they found they could utilize only about one third of the space, so the next time they bought a very small one—too small," he explained.

All boxes are brought in as complete units from Sweden, no changes being necessary to conform to the requirements of the electric control board. Practically all Electrolux units sold in Norway use electricity, only .5% operating with kerosene. Mr. Stig believes the electric control board keeps out inferior products.

Electrolux gives 18 months credit with 1/18 of the price as down payment, has no trouble in making collections.

Frigidaire Stresses Value of Refrigerator as an Investment

Frigidaire has embarked upon a big educational program in Norway designed to encourage people to buy an electric refrigerator as a good investment when times are prosperous and money fairly plentiful. Sales Manager P. Hyde has held numerous meetings, sometimes addressing as many as 200 housewives.

Two main themes are elaborated upon. First, customers are informed of the many precautions taken by the government and other agencies to safeguard food; secondly, the housewife is shown how she may continue to preserve the food after it reaches her hands by means of proper refrigeration. Sub-dealers are relied upon to phone their customers and inform them of such meetings.

Frigidaire's business in Norway has shown sizeable increases for the past three years, according to Mr. Lehmkuhl, manager of the company which holds the Frigidaire franchise for Norway. The company also manufactures washing machines.

Frigidaire leads in the sale of commercial units although its business is evenly divided between commercial and household. A considerable number of installations has been made in ships which carry fish to Spain, Portugal, and Africa. These cooling rooms were also air conditioned. In apartment houses, the company has made a few central installations but can't compete in price with Electrolux.

Mr. Lehmkuhl feels the electric control board only serves to make the product more expensive.

"Testing fees must be paid as well as .33% of our gross sales. It is also a nuisance to have to uncrate units in Oslo to make a few minor changes in switches before shipping them on to sub-dealers," he said.

Because Norwegian housewives want washing machines equipped to heat the water inside them, Lehmkuhl washers find a ready market where American machines have but a poor reception. Cheap electricity makes the market for household appliances good with about 20,000 electric ranges sold each year, according to Mr. Lehmkuhl.

He reports Frigidaire as yet has done but little with air conditioning, but is laying plans to get its share of the business when the market opens up. Movies, restaurants, and beauty parlors will be the best customers, while portable room coolers will be out, he believes.

Baker & Linde Representative Sells 110 Commercial Jobs

Its first year in business, Kjøleinstallator, handling Baker and Linde equipment, made 110 commercial installations and opened up heretofore untapped fields for the sale of commercial refrigeration.

Manager Thor Lund saw keen competition for the butcher and dairy trade so set out to look for a new market. This he found in silver fox farmers. Norwegian fox farms are recognized the world over for the beautiful pelts they produce. And now the farmers recognize refrigeration as a necessary investment if they are to save the skins of their foxes and their own financial skins.

This company also installed the first air-conditioned cold storage plant which the government subsidized because it is seeking to preserve Norwegian produce instead of buying from foreign countries. Mr. Lund sees in this cold storage business a potential market which will grow because it has government encouragement.

Auto dealers get this engineer's

recommendation as sub-dealers. They know sales psychology in merchandising such a product as refrigeration, and they are used to big money transactions and can judge customers, he says.

The company places practically all of its advertising in trade journals serving such industries as fox farming, dairying, hotel and restaurants, ice cream, fishing, and cooperatives. It manufactures evaporators and sells them to its competitors. It brings in all of its automatic equipment and single phase motors from the States, and gets other motors from Germany.

Mr. Lund and his partner, Dr. Ingenior H. Hyde, are now planning to start the manufacture of electric heaters.

As "a green kid with a white head," Ingenior Lund came to America where he stayed long enough to learn the refrigeration business and acquire a Chicago wife. For all she knew, Norway was a big iceberg with polar bears and Eskimos running around the streets, but she came here in spite of that belief.

60% of Norge Business Is Commercial Installations

The Norge refrigerator is right at home in Norway—"Norge" is Norwegian for Norway. And for sentiment's sake or otherwise, Norge sales showed a good increase over last year with a great deal of business pending, according to Manager C. Bang of the A. S. Nilfisk company, who places Norge among the refrigeration leaders here.

Sixty per cent of the business is commercial, well divided between butchers, general food stores, and dairies. They also recently installed cooling apparatus on 25 ships for preserving food.

Although there is a great deal of competition, the American models are gradually gaining the market, according to Mr. Bang.

The Nilfisk company also handles vacuum cleaners, washing machines, and ironers. The sales volume in the household appliances is small at present, but should increase greatly within the next few years. Norge maintains dealers all over Norway,

gives complete service, and extends credit of from 12 to 24 months.

Sonnichsen Sees Need for Price Stabilization

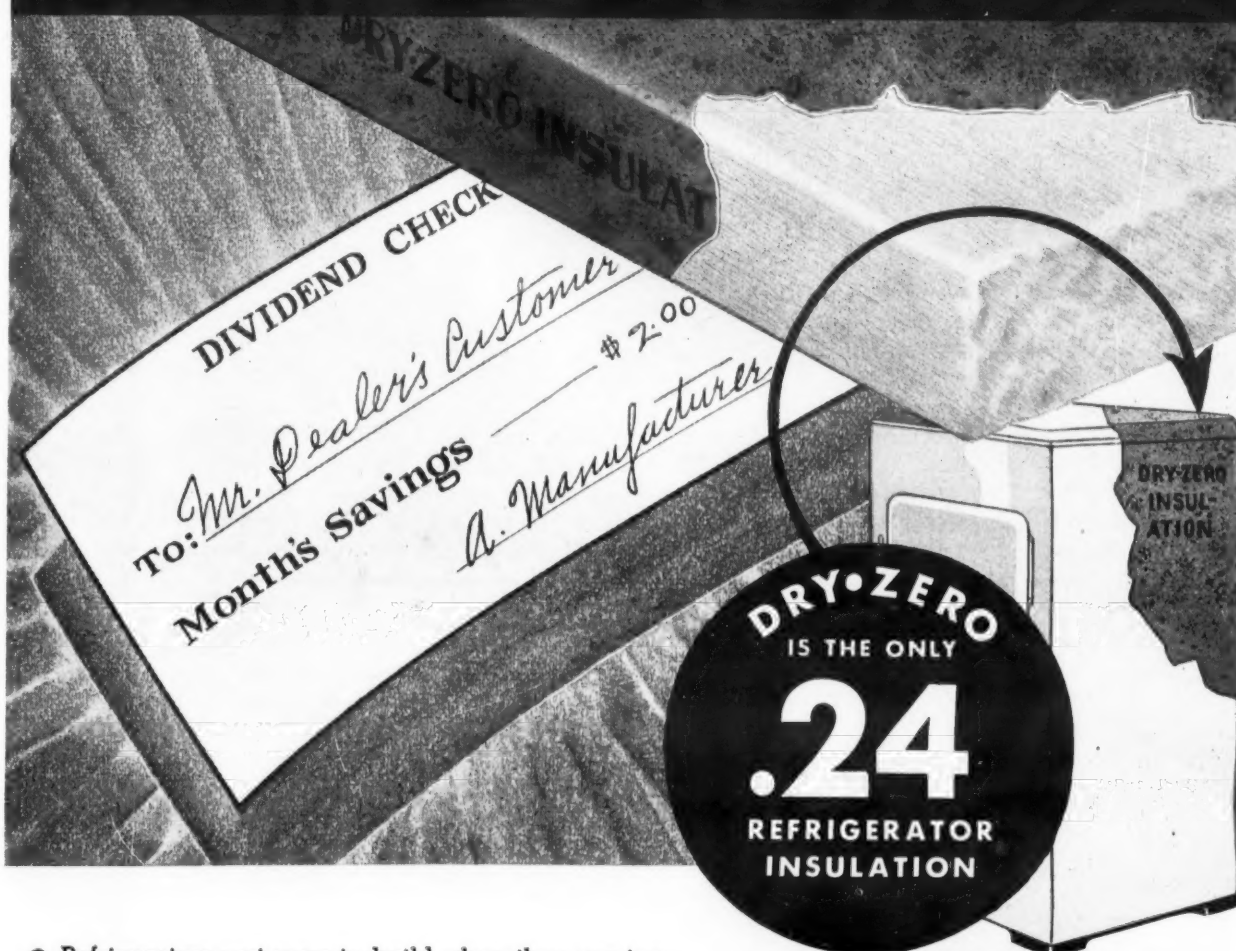
"If refrigeration sales are restricted to reputable marts whose organizations maintain standard price levels, business will be good in the future. If not, it will go to hell!" That is the opinion of Nils Sonnichsen, refrigeration manager of Sonnichsen & Co.

"At the present time, it is a difficult business to be in with competition keen, price cutting common, and no firm lines," asserted this gentleman who calls a spade by its name without quibbling.

He believes the electric control board a worthy organization, protecting the country from a flood of inferior material.

Sonnichsen just recently took up the sale of commercial units and expects this department to grow rapidly. However, he believes the biggest potential market is in the household field which has "scarcely been tapped."

YOUR MANUFACTURER SPENDS
so your customer can save



● Refrigerators cost more to build when they are insulated with Dry-Zero because this high quality insulation is more expensive than materials of shorter life and with less resistance to heat infiltration.

You dealers may question, Why is the manufacturer willing to spend more money for Dry-Zero Insulation? The answer is, Dry-Zero results in operating savings—which means that both the manufacturer and you gain an additional sales value far beyond the additional cost. The tangible extra cost brings just as tangible extra quality. It is the difference between a trademarked blanket made of wool, and an unknown blanket made of shoddy.

Remember, the manufacturer spends the extra money. You and your customer get the benefit. The householder who buys a Dry-Zero insulated refrigerator from you will find it costs less to operate. This saving runs from 20¢ to as high as \$2.00 per month, every month.

Cash in on the value built into the refrigerator with Dry-Zero Insulation. Tell your prospects about this extra value. Explain that it saves them money. Give them one of the special folders describing the benefits of Dry-Zero Insulation. Write for a supply. Dry-Zero Corporation, Merchandise Mart, Chicago.

DRY-ZERO
INSULATION
The Most Efficient
Commercial Insulant Known

DRY-ZERO
REPELS
WATER
AND LASTS
FOR LIFE

DRY-ZERO
REDUCES
REFRIGERATOR
OPERATING
COSTS

.24 INSULATION

Refrigerator insulation is rated in heat units (British Thermal Units—B.t.u.). The smaller this rating figure, the more efficient is the insulation. Dry-Zero Insulation has the remarkably efficient rating of .24 B.t.u., as determined by the U. S. Bureau of Standards and other authorities.

AIR CONDITIONING AND REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office:
Established 1926 and registered as
Electric Refrigeration News

Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
6229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell-Detroit

Subscription Rates
U. S. and Possessions, Canada, and all
countries in the Pan-American Postal
Union: \$4.00 per year; 2 years for \$7.00.
All other foreign countries: \$6.00 per year.
Single copy price, 20 cents. Ten or more
copies, 15 cents each; 50 or more copies,
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VOL. 22, No. 8, SERIAL NO. 448

OCTOBER 20, 1937

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Cooperation the Key To Education

MANUFACTURERS of component parts and materials have long been puzzled by the problem of how best to present their advertising message to the trade and the public. They are conscious of rendering distinct and notable services to consumers; they are also conscious that the very nature of their business seems to require anonymity.

The concern which makes parts or furnishes supplies to manufacturers of complete appliances or air-conditioning systems must depend ultimately for sales volume on the merchandising efforts of the complete unit makers.

If the air-conditioning industry as a whole increases its sales 40% during 1937, then it follows that manufacturers of parts for air-conditioning systems will also enjoy a 40% jump in volume. Individual concerns may have figures on either side of this mark, of course, depending upon the competitive situation.

Increase Own Business by Promoting Complete Units

Hence, it would seem that the only way the parts makers, as a group, can increase their ultimate sales is to help promote the business of complete unit manufacturers.

Numerous examples of this sort of oblique attack can be found in the electrical appliance industry. Makers of finishes have cooperated to run advertising campaigns which helped sell the beauty and convenience of modern kitchens. Individual insulation manufacturers have done likewise, using economy and long life as themes.

But advertising is not the only cooperative activity in which manufacturers of parts and supplies can cooperate. By assisting in the education of professional and business groups toward a better understanding of the proper uses of appliances and air conditioning, parts manufacturers can go a long way toward helping the complete unit makers sell more finished articles.

For example, consider the problem outlined by *Printer's Ink* magazine—in an editorial which is reprinted in an adjoining column. This editorial points out that air conditioning is being criticised by the public, largely because owners of the systems often don't know how to operate them properly.

Competitive Education Will Not Solve Problem

Who should be most interested in talking to architects, builders, doctors, journalists, and public health officials about proper air-conditioning temperatures? Why not the manufacturers of controls?

Such education, of course, should not be competitive. A slogan, "Buy our controls and quit worrying," is not the answer to the problem. Better results would be obtained by cooperative effort on the part of all control manufacturers directed at education on proper temperatures.

If a theater owner doesn't understand the effect on an audience if inside temperatures are kept too cold in relation to outside temperatures, he will chill his patrons regardless of whether he has the ABC or the XYZ controls on his air-conditioning system.

It should be obvious that the educational job which so much needs doing in this connection can be done better, quicker, and certainly cheaper by eliminating the confusing element of product competition.

Many Channels Open for Educating the Public

As a matter of fact, such a cooperative project need not be expensive at all. Use can be made of numerous important factors which are always ready and willing to help in any worth-while program of public education (especially if the program would have favorable publicity value).

Magazine writers, lecturers, teachers, industry associations, governmental agencies, newspaper editors and columnists, radio commentators, women's clubs, luncheon clubs, and public speakers of many varieties are always seeking information on new scientific developments to present as authoritative information to their audiences.

The promotional job which such publicity media can do for an industry can have enormous value, if properly directed. Unfortunately, in their eagerness to transmit to their public whatever seems new, timely and interesting, they often fail to check their sources of information with sufficient care.

Rely on Authoritative Statement Made to Other Authorities

In this connection, it might be pointed out that the more cautious—and most reliable—addressers of the public (both orally and in print) have learned one simple test of reliability to apply to any piece of interesting information.

They know that they can usually depend upon a statement made publicly by a recognized authority on the subject in the presence of other authorities.

Thus, if a prominent doctor makes a statement before a medical body, and if his statement is not challenged or disputed by other doctors, then the newspaper columnist, radio commentator, or public speaker can feel pretty sure that the statement is accurate.

The same situation holds true

Air Conditioning's Job

Reprinted from *Printers' Ink*, Oct. 7, 1937.

THE business of remodeling America's indoor weather is a thriving one, judging from statistics disclosed a few days ago by William B. Henderson, executive vice president of the Air Conditioning Manufacturers' Association. Installed cost of equipment sold in 1937 to date, Mr. Henderson reports, is 40.3% ahead of the total 1936 volume—\$71,575,967 against \$36,151,088. Which, any way you look at it, is nice going.

In charting its future, however, the industry will do well to take careful bearings on its position in the consumer mind. Unless this editorial crow's nest is badly deceived, there are breakers ahead.

During the late summer months especially, an undercurrent of consumer doubt about air conditioning has developed. Your hear stories on every side—of colds, mysterious respiratory afflictions and sundry ailments and discomforts allegedly brought on by air conditioning. Unnamed, but "noted," physicians are quoted ominously.

Obviously, there is something to some of the tales about uncomfortable experiences. By the not surprising offices of human nature, some owners of air-conditioned commercial premises are guilty of improper

when an architect talks about his profession in the presence of other architects, or an engineer before engineers, a teacher before teachers, a manufacturer in the society of his competitors.

Following this line of reason, the suggestion could be made that some sort of public forum could be used as the medium for presenting fundamental facts about air conditioning.

If such a presentation in public meeting be properly staged and publicized, you can depend upon it that writers and speakers will pick up the information and disseminate it far and wide.

Electrical appliance manufacturers have long known how to use all the available methods of educational publicity in conducting their cooperative campaigns. With the help of the public utilities, they have staged nation-wide programs of education on the beneficial results of the proper use of their products.

It would now appear that a most logical time has arrived for the education of the public in regard to air conditioning. The need is crying; the formula is known. Action is indicated.

LETTERS

Mr. Buschman Clears Up A Financial Problem

Controlled Air Corp.
3319 Olive St., St. Louis, Mo.

Editor:

Time has been the only reason why I have not already written you correcting a number of serious misunderstandings with reference to our recent interview.

I believe that in all fairness to the facts which should have been contained in the article, this letter should be published in answer to Mr. Muench's.

Inasmuch as he has carefully analyzed the facts contained in the previous article, I will make such corrections in his letter of Oct. 7, as I see fit in the order in which they appear.

With reference to the estimated \$400,000 sales volume, our sales for the first 10 months are \$319,357. Our fiscal year ends Dec. 1, so that it is no stretch of the imagination whatsoever to do \$81,000 worth of business in the remaining two months. Based conservatively on the jobs we already are entirely familiar with, I would estimate our sales for the year at closer to \$425,000. This figure naturally includes the eastern half of Missouri and central and southern Illinois which territory we serve for

operation, resulting from carelessness, ignorance or a desire to show off. Most of the talk, however, is sheer superstition of the sort which springs up around a new thing.

The point is that these stories would not receive the credence and circulation they are getting if the public were thoroughly acquainted with the true nature and the true benefits of proper air conditioning. Ignorance breeds gossip, and where there is gossip there is ignorance.

The sales figures show that the industry has done a good selling job. The existence of the gossip indicates that it must now prepare to do a better one, especially since much of the business done to date represents the easy-to-get cream and future progress will, therefore, entail sterner effort.

There must be more emphasis in individual sales and advertising efforts, and perhaps also through a collective program on educating the public on the air-conditioning idea. In emulation of its own equipment, the industry must pump the fresh air of constructive information into the consumer mind and treat these foolish tales to a thorough dehumidification.

Airtemp as well as the Whiting Corp. whose line of underfeed stokers we handle.

The markup mentioned as running up to 40% was with specific reference to the Airtemp line of self-contained units and can easily be confirmed. Our average markup on all classifications of business will run slightly under 25%.

Referring to the tabulation of expenses, it must be taken into consideration that the chief engineer's income which will be approximately \$6,000 a year is predicated on \$3,600 salary and 1/2 of 1% of the total volume enjoyed by the company.

The next item represents the outstanding error in reconstructing our interview in that my statement to you was that our chief engineer had four assistants consisting of two draftsmen and two sales engineers. This eliminates entirely the expense item of \$14,400. Also, the two draftsmen receive \$135 per month instead of the \$235 as published, or a total of \$3,240 compared to the item shown of \$2,820.

On a total of \$225,000 worth of business which has been billed, an analysis showed our total sales cost consisting of bonuses and commissions to be 4% of the billing. Applying this to \$400,000 worth of business, it can be said that roughly \$16,000 represents the bonuses and commissions. This figure would then compare with a total of \$27,900 tabulated in the letter.

My income as secretary and general manager of the company is predicated on a salary plus a percentage of the profit.

The general overhead expense items listed are inadequate.

Summing up, we find that as compared to our budget, the expense items referred to in the letter of Oct. 13, should be reduced approximately \$30,000 which would bring them more in line with our operating budget.

The estimated total gross profit of \$90,000 is \$9,000 short of our budget which calls for a profit of approximately \$20,000 on \$400,000 worth of volume which, if considered as the first year in business, I think would be very satisfactory.

Our books are audited by certified public accountants monthly and if our esteemed friend in Des Moines cares to make a trip to St. Louis, I will be more than glad to give him any further detail or information he may desire.

H. W. BUSCHMAN,
Secretary, General Manager.

Progress of Air Conditioning In English Market

Carrier
Weathermakers Limited
27, Conduit St., London, W. 1

Editor:

We think you may perhaps be interested to know what this subsidiary company of the Carrier Engineering Co., Ltd. of London is doing in the air-conditioning field.

This subsidiary company was formed in the early part of this year to handle the Carrier self-contained air-conditioning units and other unit types of Carrier air-conditioning equipment.

We have in the self-contained units a complete air conditioner which provides for positive ventilation, filtration of the air, cooling and dehumidification in the hot weather, and heat-

ing and humidifying, both automatically controlled and pre-selected, for use during the cold weather. It will therefore be seen that these units are complete all the year around air-conditioning units for relatively small individual spaces.

We see continuously in the *Air Conditioning and Refrigeration News* that the American dealers and distributors of air-conditioning equipment are constantly discussing in the air-conditioning column the difficulties of overcoming sales objections, obtaining the right kind of salesmen, having trouble with racketeers and so forth in America.

This country, as far as air conditioning for human application is concerned, is surely far behind America, and the American public must surely be more air conditioning minded than the British public, and yet in a very few months we have been able to sell and install a very large number of self-contained unit air conditioners, all of which are giving complete satisfaction to their users. In fact, we may say with truth that our customers are our best salesmen.

We have air conditioned, by the Carrier self-contained unit system, all kinds of spaces for all kinds of applications from individual bedrooms and living-rooms to restaurants, flower shops, telephone exchanges, machine shops and factories, meat storage rooms, and so forth.

Can it be possible that with the perfection of the Carrier self-contained unit air conditioners to make provisions for year-around air conditioning, America is being left behind by England in sales?

Not one of our sales representatives, except our chief sales engineer, is an engineer; some of them have had refrigeration experience.

A short course of intensive training and a system of calculating for various applications which has been boiled down to be simple and yet efficient was enough for our sales representatives to start obtaining business immediately they went into the field.

We employ all sorts of methods for creating interest in the minds of prospective customers and for obtaining prospective customers, but under no conditions do we promote a system of high pressure salesmanship.

We are so convinced that the only way to a healthy growth of our business is to make every installation a satisfactory installation, that we prefer to turn down an order rather than chisel our estimated price to the customer, thereby reducing the efficiency of the installation.

It is interesting to know, that in the initial stages of our business, we offered absolutely free trials to any good prospects who were not convinced that what we were telling them could be accomplished, and of the large number of free trial installations made, not one was ever taken out. This proves:

1. The efficiency of the equipment.
2. The efficiency of our representatives in surveying spaces.
3. That there is definitely a market of great importance for this type of equipment when we have had ample time to educate the public to its advantages and benefits.

We, over here, also have difficulties in regard to overcoming prejudices of people who have bought unsatisfactory so-called air conditioning. In these cases we invariably make a free trial offer with complete success.

We are sending you herewith an article from the *Electrical Times* of Oct. 7th, setting forth and illustrating a small job which we did in the telephone exchanges of an important manufacturer of telephonic equipment; the results obtained proved highly satisfactory, and the cost to the company concerned to obtain these results was, you might almost say negligible.

As our business grows, we are finding a number of manufacturers placing on the market everything from extractor fans to convertor heaters, which are advertised as air conditioners, and we are endeavoring to combat them to the best of our ability by various means.

Electricity Supply Authorities, which you call public utility companies, are becoming very greatly interested in air conditioning as they now begin to realise that air conditioning is one of the best methods they can find, not only of increasing their load, but also of filling in the gaps in their graphs.

There is no doubt that we have a very great future over here, and if you are interested, we would be pleased, from time to time, to send you details of interesting installations which we make.

Although we have stated above that we have made installations for all kinds of applications, up to the present—of course we have not been in this market very long, although our parent company is the leading air-conditioning company in the country—we are finding that our best market is in board rooms, executives' offices, and general offices.

We think that it will not be long before blocks of flats are entirely air conditioned by the Carrier unit system.

A. GORDON DERRIS,
Director.

DISTRIBUTOR-DEALER DOINGS

Graybar in Cleveland Names Home Economist

CLEVELAND — Miss Margaret Doughty has been appointed Kelvinator home economist for the Graybar Electric Co. branch here. For the past four years she has held a similar position with Little & Co., Greenville, N. C., Kelvinator distributor.

Her work will consist of assisting dealers in the territory by conducting cooking schools featuring Kelvinator ranges and refrigerators.

30 F-M Units Sold in Town Of 200 Residents

YOUNG AMERICA, Minn.—In this town with a population of 200 people, Art Bugel and Hugo Messingbring, Fairbanks-Morse dealers, have sold 30 F-M refrigerators by working on the creed: "Every family a prospect—every prospect an owner."


"When a good refrigeration story is told, every prospect becomes an owner," the dealers state.

14 Refrigerators, 2 Washers and Radio Sold in Day

ROCKFORD, Ill.—Selling 14 refrigerators, two washers, and one radio in one day is the record which Lester K. Reid, salesman for the S. E. Rice Co., full-line Fairbanks-Morse appliance dealership, made here recently.

Anaconda Copper Refrigeration Tubes

BRIGHT INSIDE!



THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Offices: Waterbury, Conn.

CONDENSERS
DOMESTIC EVAPORATORS
COMMERCIAL EVAPORATORS
AIR CONDITIONING SURFACE

McCord
REFRIGERATION AND
AIR CONDITIONING
Products

BLAST HEATING SURFACE
COMFORT COOLERS
MARKET COOLERS
UNIT HEATERS

McCord RADIATOR & MFG. CO.
DETROIT, MICHIGAN

Dayton Sales Increase 24% In First 8 Months

DAYTON — Electric refrigerator sales here during August showed an increase of 33% over sales for the same month last year, according to reports from 70 local dealers. Only 66 dealers reported for the month last year.

Sales for the first eight months of the year were 24% above the mark set for the eight-month period in 1936.

Gas refrigerator sales for August dropped 13% below August sales last year, according to the reports, while sales for the eight-month period were 7% lower than sales during the same period in 1936.

Deeley Opens Showroom In Greenfield, Mass.

GREENFIELD, Mass.—Frank E. Deeley, General Electric dealer of Holyoke, Mass., has opened a new showroom here. Mr. Deeley has been operating in the Holyoke territory for five years.

150,000 Attend Show Of Springfield Dealers

SPRINGFIELD, Mass.—More than 150,000 visitors viewed the 18 electric refrigeration booths placed by 10 dealers and distributors at the twenty-first annual Eastern States Exposition held in the Industrial Arts building recently.

The exhibit background was white and bore a large electric sign worded "Electricity Costs So Little—Does So Much." Furnishings were white in modernistic style.

Cooperating electric light companies were: Western Massachusetts Companies; Hartford Electric Light Co.; New England Power Association; Connecticut Power Co.; Twin State Gas & Electric Co.; Public Service Co. of New Hampshire; New England Gas & Electric Association; and the Edison Electric Illuminating Co. of Boston.

Products exhibited included Westinghouse, General Electric, and Kelvinator refrigerators and appliances; Frigidaire refrigerators; Monarch ranges; Easy washing machines; Landers, Frary & Clark Universal refrigerators and small appliances; Apex refrigerators and washing machines; and Crosley refrigerators and laundry equipment.

Kiefer-Stewart Appointed Kelvinator Distributor

DETROIT—One distributor and two dealers have been granted household appliance franchises by Kelvinator division of Nash-Kelvinator Corp., reports Ralph C. Cameron, sales manager of the company's household appliance division.

The new distributor is Kiefer-Stewart Co., Indianapolis; the two dealers are E. W. Heintz Co., Akron, Ohio, and Cope Electric Co., Alliance, Ohio.

Monroe Hardware Leases New Orleans Building

NEW ORLEANS—A long-term lease on a 160 x 200 ft. building here containing 24,000 sq. ft. of floor space has been taken by Monroe Hardware Co., state distributor of Westinghouse appliances with headquarters at Monroe, La. Plans call for renovation of the building for use as office and warehouse. The company has an office here at present, with W. B. Meek as manager.

Blaine Directs Appliance Sales for Werlein

NEW ORLEANS, La.—Robert Blaine has been appointed manager of the home appliance sales department of Philip Werlein, Inc., Frigidaire distributorship here.

Jones Heads Hotpoint Sales for Simon

BALTIMORE—H. P. Jones, former general sales manager of Havens Electric Co., Inc., Albany, N. Y. distributor of Hotpoint refrigerators and appliances, has been appointed sales manager of the Hotpoint division of Simon Distributing Corp., Hotpoint distributor in Maryland, the District of Columbia, and parts of adjoining states.

J. F. Brandenburg, former district sales manager for Radio Corp. of America and more recently with Zenith Radio Corp., has been appointed sales manager of Simon's Motorola home and auto radio division.

San Diego Electrical Show Scheduled for Dec. 1-5

SAN DIEGO, Calif.—Fifth Annual Electrical Show sponsored by the Bureau of Radio and Electrical Appliances of San Diego County will be held in the Palace of Better Housing, Balboa Park, Dec. 1 to 5. The show held here last year drew an attendance of 86,000.

Headed by an intensive advertising and promotional campaign, plans indicate that the 1937 exhibit will contain a more complete representation of electrical displays than ever before, according to J. Clark Chamberlain, league secretary.

Space for the electrical show is open to manufacturers, distributors, dealers, and other representatives having electrical equipment to display.

Dayton Distributors Eye Electrification Project

DAYTON — Electric refrigeration distributors here are keeping their eyes on the Darke-Preble county rural electrification project, which is expected to be ready for use and energizing about next Jan. 15. More than 200 miles of line are being erected to serve the farmers in these two counties, and distributors covering these territories consider them a fertile field for sales of electric refrigerators and other appliances.

Ray Muffley Heads Electric Club of Washington

SEATTLE, Wash.—Ray U. Muffley, commercial manager of the Puget Sound Power and Light Co. was elected president of The Electric Club of Washington at its recent meeting here.

He succeeds C. D. Hepler, president and manager of Trumbull Electric Mfg. Co., Seattle.

Other officers are: M. P. Hotelling, state electrical inspector, first vice president; Charles Allison, Puget Sound Power and Light Co., treasurer; and J. D. Sparks, Seattle agent of the Ilg Electric Ventilating Co.; R. D. Hyneman, Graybar Electric Co., and A. J. Lutz, General Electric Supply Corp., trustees.

Harpster Co., Mansfield, Sells Entire Norge Line

MANSFIELD—The Harpster Co. here has been appointed dealer for the full line of Norge home appliances, including refrigerators, washers, ironers, electric and gas ranges, stokers, furnaces, oil burners, and unit air conditioners.

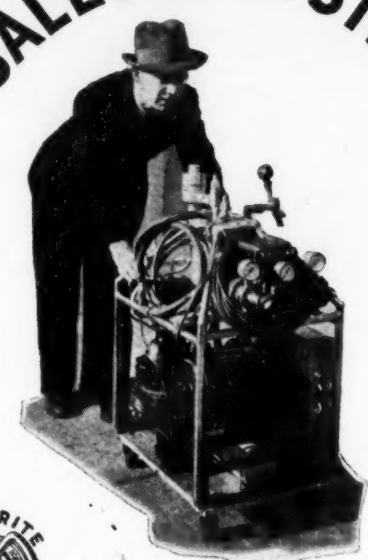
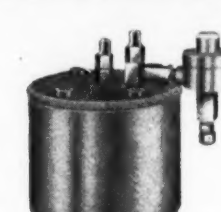
R. B. Wall Co. Moves to Larger Quarters in Wilkes-Barre

WILKES-BARRE, Pa.—The R. B. Wall Co., Fairbanks-Morse home appliance distributor in this territory, is now occupying new quarters in the six-story building located at the corner of North Washington and Union streets.

A GREAT SALES BOOSTER...

TEMPRITE

PORTABLE DEMONSTRATOR

TEMPRITE INSTANTANEOUS

The Temprite Portable Demonstrator sells in the most effective possible way—by actual demonstration. It is a complete beer cooler, including compressor. You roll it under the prospect's bar, connect up, and in a minute he can serve beer from it. The difference in the beer served is instantly apparent—perfectly cooled—it has all the sparkle and tang it should have.

Regardless of the amount of beer drawn, Temprite always serves it perfectly—with no waste. The Demonstrator convinces the tavern keeper.

TEMPRITE PRODUCTS CORPORATION
1349 East Milwaukee Avenue • Detroit, Mich.
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

SOLIDS-LIQUIDS-GASES-SOLIDS-LIQUIDS-GASES-SOLIDS

USE DRIERITE

FOR DRYING

Anhydrous Calcium Sulfate

Air Refrigerants Industrial Gases

Write for Literature and Quotations

W. A. HAMMOND, YELLOW SPRINGS, OHIO

The Distributor Who Sells the

Copeland REFRIGERATION LINE

IS BUILDING GOODWILL FOR YEARS TO COME!

It is just good business foresight to sell your customers a quality-built Copeland product. Whether you sell a Copeland Household Refrigerator, Commercial Refrigeration, Washer or Ironer, you are wisely building up a backlog of long-time customer satisfaction that will pay you dividends in continued patronage for many years.

Write for Sales Plan
COPELAND REFRIGERATION CORPORATION
Holden Ave. at Lincoln — Detroit

PERFECTION Service Tools are Certified to Excel

Ask for catalog covering complete line of Service Tools, Condensing Water Regulators, Compressor Parts, Valves and Fittings.

PERFECTION REFRIGERATION PARTS CO.
HARVEY, ILLINOIS

Refrigerators Need NEW DOOR GASKETS

★ You never lack prospects for door gasket replacements. Today, right in your own community, one out of every four refrigerators is in need of this service—a service that you can supply at a profit.

Get in on the ground floor of this new and profitable business. Miller will relieve you of all product problems. From their simplified line of 20 gasket types, you can service 80% of all refrigerators, regardless of make.

The market is ready and waiting. It is your next move. Send for illustrated price list. If not obtainable through your local jobber, write direct.

THE MILLER RUBBER COMPANY, INC.
Akron, Ohio

IMMEDIATE DELIVERY

Miller

"Engineers in Rubber"

SELLING AIR CONDITIONING

Buffalo Distributor Says Dealer Must Know His Costs to Make Profit in Air Conditioning

BUFFALO—A complete knowledge of all his costs is something that every air-conditioning dealer must have in hand if he expects to operate his business at a profit, believes Edwin R. Cooney of the Cooney Refrigeration Co., a leading air-conditioning and commercial refrigeration distributor here.

"You've got to know your costs," says Mr. Cooney, "because if you don't keep an accurate check on them, you're going to lose money no matter how big a mark-up you put on a job."

BUSINESS STARTED IN 1929

Mr. Cooney can speak with authority on the subject of operating a refrigeration and air-conditioning dealership successfully. He launched his own business in October, 1929—almost simultaneously with the stock market crash that started the country down the path of Depression.

He guided the firm successfully through the lean years of the early

thirties, and kept building his organization and strengthening his reputation in the Buffalo and Syracuse territory.

Beginning in 1934 the Cooney Refrigeration Co. really began to go to town from a volume business standpoint, and in its last two fiscal years has just about doubled the dollar volume it did in each of the two preceding fiscal years.

SALES NEAR \$400,000

"Our fiscal year ends Nov. 1," explained Mr. Cooney. "For the '34-'35 year our dollar volume was \$120,000; for the '35-'36 year it was \$220,000; and it looks like we'll hit the \$400,000 mark by the close of the current year."

"And this will give you an idea of how the air-conditioning part of our business has mounted; two years ago about 75% of the total dollar volume of business done was accounted for by the sales of commercial refrigeration equipment. This year we'll get 75% of our dollar gross out of air conditioning."

Mr. Cooney ranks as a real pioneer in the refrigeration industry. He was with the Brunswick-Kroeschell Co., whose refrigeration history dates back to the turn of the century, and he helped that company to introduce a small commercial ice machine, which he says was the first small refrigerating machine on the market.

BECOMES CARRIER DEALER

In 1929 he formed his own company to handle the Brunswick-Kroeschell line of refrigerating equipment for all of New York state outside of the New York City metropolitan area. He headed up the company in Buffalo as president, with his brother James L. Cooney as vice president heading up a branch operation in Syracuse.

When Brunswick-Kroeschell was absorbed by Carrier Corp. a couple of years later, the Cooney Refrigeration Co. became a dealer for all of the Carrier products, including the air-conditioning line.

An engineer by training, Mr. Cooney thinks that the first requisite for success in air conditioning is proper engineering of all jobs. One of the first things he did after becoming a Carrier dealer was to take into his organization two thoroughly-trained engineers who had been working for Carrier Corp. These men form the basis of a crack and veteran engineering organization that

Explains Setup



EDWIN R. COONEY

Mr. Cooney can depend upon to back up his statement to a prospect or user that a job is "right."

To other dealers, however, it is the matter of Mr. Cooney's "cost control" that is probably of prime importance, for it is in this particular sphere that profits are made—or missed.

COST SUMMARY SHEET

The cost summary sheet which the Cooney company uses is very simple. At the top there are lines for the name and address of the firm or individual buying the job, a line for shipping instructions, and space for the order number and name of the salesman who sold the job.

At the left-hand side of the summary sheet are spaces for the date and purchase number, then a long space for a description of the material and labor, and at the right-hand side are the headings "cost" and "selling," denoting the place for the cost and selling price. At the bottom is a line for a "total" and for the "net profit" on the job.

CHARGE EVERY ITEM

"The form of the cost summary sheet isn't important," declared Mr. Cooney. "What's really important is to make sure that every item of cost for the job involved goes onto that sheet. Once you get that over to your employees you're on the road to getting the right kind of a profit out of every job."

A file folder is prepared for each job, and all written matters pertaining to that job, such as the cost summary and correspondence, are numbered with the number given to the job and put in this file.

Thus, if any items of cost are added to the job at a later date, or which may not be recognized until some time after the cost summary has been made, they will show up in the file, and the management learns where it has slipped up and is taught to be on guard against similar possibilities on future jobs.

Such a folder also proves very handy in directing service operations,

'Cost Control' As a Way to the Land of Profit

Those dealers in air-conditioning equipment who are pretty well satisfied with the volume of business they're doing, but not with the profit they make on it, may find some useful suggestions in this interview with Edwin R. Cooney of the Cooney Refrigeration Co. of Buffalo.

Mr. Cooney's methods of "cost control" and "budget control" are factors in the management of a dealership which would seem to be fundamental to profit-making.

The Buffalo dealer's observations on selling methods, sub-dealers, methods of computing the mark-up, and other phases of the business, are other high spots in this sixth of a series of interviews with leading air-conditioning dealers in all parts of the country.

since it contains complete information on the type and size of all the parts used on any particular job. And the matter of numbering the jobs merely makes the matter of locating the file a very simple matter.

42% MARK-UP

The total of all the cost items on the job (when the management is sure that all the cost items have been set down) is taken and divided by the factor of .7, which is the price then quoted to the purchaser. By using the .7 factor a mark-up of 42% on the cost of the installation is realized, which Mr. Cooney believes is an adequate but necessary margin of profit for the air-conditioning dealer.

That mark-up, however, covers everything; no charge for service reserve is added, nor is the engineering work on a particular installation added to the cost.

Another important factor in realizing a profit is the establishment of a budget, Mr. Cooney declares.

ESTIMATE EXPENSES

"With an established mark-up, you can estimate how much money you will have for operating expense and profit by setting a reasonable dollar volume quota for the year. This is pretty much of a piece of guesswork, of course, but from past experience and the knowledge of the market that he certainly should have, the dealer should be able to arrive at a figure that will be pretty close to the actual mark."

The same thing holds true of good "budget control" as of good "cost control"—all the items must be set down.

MAIN COST ITEMS

The following are the main items for which Mr. Cooney makes provision in his budget:

Salesmen's salaries, engineering staff salaries, stenographic and clerical help's salaries, administrative costs, advertising and sales promotion, rent, electricity, postage, insurance, telephone, association membership, traveling expense, office supplies, discounts, labor costs unabsorbed by any particular installation, service costs, concessions to customers, bad debts, taxes—and profit.

Of the gross margin of profit sales expense eats up about a third, all other expenses between 33½ and 50%, and what is left is profit, Mr. Cooney explained.

Cooney's salesmen are paid on a straight salary basis. There are no commissions. There is, however, an unwritten understanding among the men that they will share in the profits at the end of the year.

"We like to feel that the company is something like a 'family' affair, and we operate accordingly in sharing the profits," the president of the company declared.

"We haven't had to go looking for salesmen," he continued, "they've come to us. They explain that they've heard that the air-conditioning and refrigeration field is a good one, and that we're going places in it."

COLLEGE-TRAINED SALESMEN

Nearly all of the Cooney salesmen are college trained, and most of them have had enough engineering training to enable them to understand the manufacturer's data book, which is quite necessary.

"Carrier's data book," said Mr. Cooney, pointing to a volume almost as thick as the standard Webster's dictionary, "makes it possible for the salesman who can use it to sell either commercial refrigeration or air conditioning."

And that's just what the salesmen do. There's no hard and fast division line between the two fields, and a salesman is not made to confine his efforts to either one.

"The men more or less gravitate to one field or another," states Mr. Cooney. "If a salesman finds the going good in the commercial field, and especially in some one particular part of the commercial refrigeration market, he is not apt to devote much, if any, time to selling air conditioning. The same holds true for the man who is finding his bread and butter in the air-conditioning market."

REPLACEMENT MARKET

Digressing a moment from the topic of air conditioning, Mr. Cooney pointed out that the replacement market is still very active, with low-pressure systems of the unitary type being preferred for nearly every job, even by dairies, which once insisted on installing only ammonia equipment.

The president of the Buffalo dealership has some very definite ideas on selling. Says he:

"Instilling confidence is the secret of success in selling. The prospect has got to have confidence in the salesman and in the job, before he'll buy."

"It holds particularly true where you are selling a new product or a new idea. The prospect doesn't have

(Concluded on Page 15, Column 1)

Dehumidified Air MAKES YOU SPARKLE!



Air that puts spring in your step, makes you feel like a million dollars! At Denver, at Tucson, you find atmospheres like that. Ideal humidity conditions make them so.

To get the same effect from conditioning, Activated Alumina is now being employed. It takes moisture out of the air by adsorption and eliminates the "clamminess" and "shock" occasioned when the humidity of cooled air is inadequately controlled.

Our engineers will gladly discuss with you the application of this new principle of air conditioning. Activated Alumina equipment is economical for comfort conditioning of the home, efficient for controlling humidity in industrial plants. A new booklet, *Activated Alumina, Its Properties and Uses*, gives pertinent data. Write for it. ALUMINUM ORE COMPANY, Sales Agent: ALUMINUM COMPANY OF AMERICA, Pittsburgh, Pennsylvania.



ACTIVATED ALUMINA

FOR REDUCING HUMIDITY

FOR SERVICING ICE CREAM CABINETS AND DAIRY COOLERS

Artic

REG. U.S. PAT. OFF.
(DU PONT METHYL CHLORIDE)

PURITY . . . LOW MOISTURE LOW ACIDITY GUARANTEED

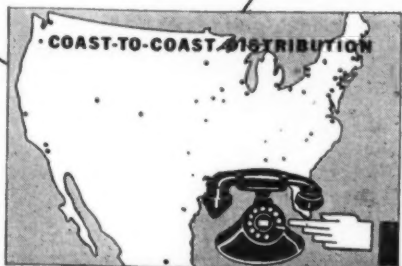
IT'S the Methyl Chloride used by leading manufacturers for the original charge. In recharging the Methyl system it's safer to use ARTIC because of its guaranteed purity, low acidity and low moisture content. You can depend on its uniform quality. Easy to get on short notice because it's

stocked in standard containers in principal cities.

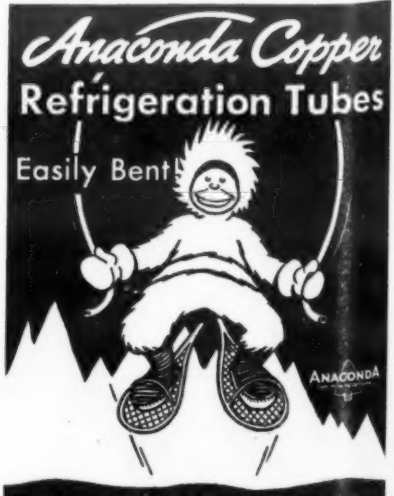
ARTIC is widely used for ice cream and dairy work because it is the dependable, quick-cooling and quick-freezing refrigerant, operating efficiently at positive pressure to give controlled low temperatures.



Artic—THE PREFERRED METHYL CHLORIDE FOR SERVICE WORK



E. I. du Pont de Nemours & Co., Inc.
The R. & H. Chemicals Dept.
Wilmington, Del.
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco



THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Offices: Waterbury, Conn.

Cooney Explains Sales Canvassing, Dealer, Engineering and Installing Methods Used for Air Conditioning

(Concluded from Page 14, Column 5)

much of an opportunity to check up on the product, or how users have found it. So he has to put his faith in the salesman sitting across the desk from him—and the salesman's job is to get the prospect's confidence.

"Another thing: no salesman should ever fear a customer. He should know his business so well that he can talk face to face with him on any problem or complaint that the customer may have."

For a time Mr. Cooney had a little trouble in reaching a decision as to just how large his sales force should be, and for a time he found himself overstaffed. He came to the conclusion that a smaller, hard-hitting sales force would do a better job, so that he now has a half dozen men who are out seeking business.

NO COLD CANVASSING

While he believes with L. R. Boulware, Carrier vice president in charge of sales, that "every enclosure is your market," Mr. Cooney naturally has been concentrating on those various divisions of the market which offer the most lucrative possibilities at the present.

The salesmen don't do any real cold canvassing. They don't have to. Part of their business comes from leads sent out by the manufacturer, part of it comes from installing equipment for chain stores, which business has more than likely been contracted for outside of Buffalo.

Cooney salesmen work hard to drive a wedge in any particular division of the air-conditioning market that hasn't been "cracked" previously.

"If one cocktail lounge goes in for air conditioning, other cocktail lounges are soon forced to follow suit," Mr. Cooney asserts. The Cooney company seems to have been particularly successful in "getting in" on the trend of eating places to air conditioning, for the firm has made 16 installations for such establishments.

Moderate Climate

Buffalo's climate is normally quite moderate in the summer, and well-known is the fact that there is generally a breeze off the lake (about half the time it's more like a gale than a breeze). But it can get hot and very, very muggy in Buffalo in the summer months and there a real need for cooling and dehumidification presents itself.

And there are other factors which are helping to create a demand for comfort cooling. Mr. Cooney brought up one which probably hasn't been given the serious consideration it deserves.

BETTER LIGHT—MORE COOLING

"The utility with its Better Light—Better Sight campaign is killing two birds with one stone—at least if the drive does as convincing a job as it did on one local merchant," Mr. Cooney relates.

"A new department store here really went for the Better Light—Better Sight propaganda in a big way, so much so that they probably have the best-lighted store in the country."

"But at the same time they've got so much candlepower that the customers roasted—or did roast—about nine months out of the year until air conditioning was installed."

Mr. Cooney declares that the one essential to sales success is to "get a reputation by doing your share of business in the community."

LITTLE ADVERTISING

So far the Cooney company hasn't given much attention to advertising as a means of promoting sales. The firm's advertising efforts have been practically confined to complimentary advertisements which are run in connection with the opening of a new establishment which they have air conditioned. For example, if a jewelry store remodels and air conditions its premises, and decides to advertise the fact in a newspaper "announcement" piece, the Cooney company will buy a part of the space along with other concerns that may have had a hand in the job.

Those cool breezes that never seem to stop blowing in from the lakes plus the factor of 25-cycle current in some sections of the city make Buffalo a pretty tough market in

which to try to sell room coolers, Mr. Cooney points out. Thus, he's going to concentrate on complete systems for commercial establishments and year-around systems for residences.

"The big residential market is in the newly constructed homes," he says. "Air-conditioning dealers should be ashamed to have any home worth \$5,000 or more go up without a year-around air-conditioning system, because they have a shatter-proof argument for the owner or builder to the effect that any home without such equipment will be obsolete in less than 10 years."

Mr. Cooney has worked on the development of a new boiler unit for home heating, which will be introduced this fall under the trade name "Coreco." He declares that it will offer some advances in home heating systems.

In residential air conditioning Mr. Cooney leans to the "split system," whereby bathrooms, kitchens, and other rooms desired can be heated separately. The Coreco boiler is aimed to work in effectively with this thought, he declares.

INDIVIDUAL ENGINEERING

"Air conditioning will always involve individual engineering of jobs," states Mr. Cooney. "You just never meet the same conditions on two jobs, no matter how similar the application may be. And I don't think that the factory engineers are ever going to formulate methods so simple that you could, for example, estimate the equipment needed by merely finding the cube of the building."

Mr. Cooney's engineering staff of the two engineers he drafted from the old Carrier-Lyle organizations, and two draftsmen, are highly important and well-paid members of the organization. While salesmen do some of the preliminary estimating, it is a Cooney rule that the engineers check all estimates thoroughly, and make the estimates themselves wherever possible.

DOES OWN INSTALLING

The Cooney company maintains its own installation force, and does all the work of installing the air-conditioning systems sold by the firms with the exception of the ductwork, electrical wiring, and plumbing.

These latter-named operations are sublet to contractors who specialize in such operations. The cost of this sublet work is added into the general cost figure before the mark-up is taken—in other words before the cost is divided by the .7 factor.

Mr. Cooney's experiences with sub-dealers and his ideas with respect to the amount of territory of an air-conditioning franchise are thought-provoking.

"As the number of sales of air-conditioning equipment increases, dealer territories will decrease, but big territories are needed now to pay for the upkeep of an organization necessary to do the right kind of a job," he says.

"We have a branch at Jamestown, N. Y., which operates successfully. However, at one time we had as many as 14 sub-dealers; now we have but two. There's just not enough air-conditioning business in the smaller towns at present to justify a full-time dealer operation."

CONCERNING SUB-DEALERS

"We have to send out one of our engineers every three weeks to these dealers, as they can't afford to hire engineers. This expense could hardly be justified for a dozen dealers who weren't selling many jobs."

"It's possible that for the present, at least, a scheme could be worked out whereby the dealer in a big city might have dealers in smaller cities who would give him bona fide leads—and who would be given a small commission for such tips."

There's one thing which Mr. Cooney does himself that might well be imitated by all proprietors of air-conditioning dealerships. Occasionally he handles a job all the way through by himself—from closing the sale to making the engineering estimates, and seeing that the job is installed correctly and that it starts to operate properly.

"It's the one thing I can do to really keep me in touch with all the problems of my business," he says.

Northwestern Utility Co. Promotes Conditioning Among Dealers

HURON, S. D.—Providing dealers with an elementary air-conditioning manual which enabled them to become acquainted with its fundamentals, discover its possibilities, and compile pertinent material necessary for an engineering estimate, has solved what was at first a tough promotion problem for Northwestern Public Service Co. in this sparsely-settled territory.

At first the company decided to help dealers only in obtaining air-conditioning prospects, reports J. W. Ankenmann, sales engineer, but found that the size of its territory made this method impractical.

"Since our property extends 900 miles, dealers could not afford to cover such an expanse properly," he said. "We would have a 3-hp. prospect at one end of the property one week, and the next week, a 5-hp. prospect at the other end."

"So we decided to furnish our dealers with a manual written in elementary language, which would acquaint our employees with the fundamentals of air conditioning, enable them to see its possibilities, and equip them to furnish necessary pertinent data for an engineering estimate."

"We did not propose to make the

dealers air-conditioning engineers," Mr. Ankenmann said.

Success of the data sheet, furnished to dealers by the utility, has been proved by several quotations wherein, without having seen the space to be cooled, the company has been in line on its quotation. On one quotation it came within \$16 on an installation amounting to \$3,000.

"Completeness of the data sheet governs the success of an engineering estimate. If all data are correctly supplied, the estimate can be formulated within reason. It is naturally better to see the place to be cooled or heated before a final layout is devised," he added.

A direct-mail scheme involving mailing pieces from air-conditioning manufacturers is used by the utility as a further aid to dealers. The company has issued also some mail pieces of its own, two of which are headed "What Do You Want in Air Conditioning?" and "A Guide to the Buying of Air Conditioning."

Personalized Sales Message Used by Gar Wood

DETROIT—First of a series of "Dewey Talks," containing information for Gar Wood branches, distributors, dealers, and salesmen, has just been issued by the air-conditioning division of Gar Wood Industries, Inc.

Issued in booklet form, the talks are the work of Frank H. Dewey, general manager of Gar Wood's air-conditioning division.

Fairbanks, Morse Has 4-Week Study Course

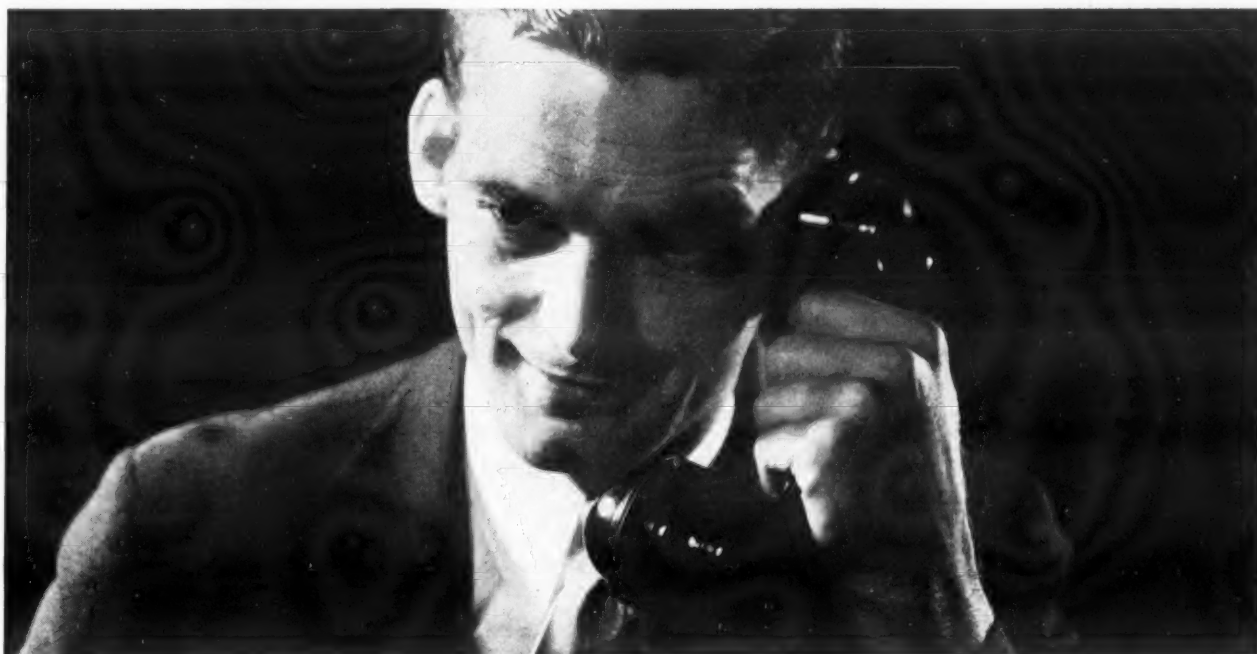
BELOIT, Wis.—A four-week course in air conditioning for 40 engineers representing 16 branches of Fairbanks, Morse & Co. opened at the plant here Oct. 4, under supervision of J. W. Bostwick, manager of the company's air-conditioning division. Engineering fundamentals and air-conditioning details will occupy "students" during the first three weeks, with the fourth week devoted to laboratory work for one engineer from each branch.

Subjects include mechanical refrigeration, compressors, evaporative condensers, cooling towers and their uses, electric motors, pumps, design, piping and installations, job estimates, contract writing, and the business end of air conditioning, including advertising and sales.

Classes are being held between 8 a. m. and noon, and from 1 to 5 p. m., with no Saturday afternoon or Sunday classes.

Members of the faculty, besides Mr. Bostwick, include L. B. Jackson, managing engineer of the company; J. O. Johnson, chief engineer of the company's air-conditioning division; J. M. Benson, W. W. Grear, H. J. Kincaide, C. L. Olin, and C. E. Plegler, all of the Servel Company, Evansville, Ind., and G. R. Anderson, George Hall, F. C. Dierks, H. J. Barbour, A. L. Decker, H. N. Baum, and A. C. Dodge.

"SEND OVER 5 MORE DRUMS OF ANSUL"



Once you have experienced the satisfaction of using Ansul Sulphur Dioxide and Ansul Methyl Chloride, you will always re-order these dependable refrigerants by name.

If you are not already one of Ansul's satisfied customers, make a note right now to specify Ansul the next time you order refrigerants.

Ansul quality is guaranteed by the individual analysis tag attached to every cylinder. Ansul service is maintained by good jobbers in every refrigeration center — one of them is near you, anxious to serve you.

ANSUL

SULPHUR DIOXIDE

METHYL CHLORIDE

ANSUL CHEMICAL COMPANY • MARINETTE, WIS.

COMMERCIAL REFRIGERATION

173 Commercial Units Sold in August by Houston Dealers

HOUSTON, Tex.—Sales of 173 units of commercial refrigeration equipment were made in the Houston territory during August by dealers reporting to Houston Lighting & Power Co.

Unit sales of commercial refrigeration equipment for the first eight months of the year total 1,422, the report shows. Of this amount, approximately 50% or 726 units were beverage coolers, with water coolers second, with 256 units, and display refrigeration third, with 131.

Other sales during the eight months include 73 storage refrigerator jobs, 15 water cooler systems, and 221 installations of miscellaneous refrigeration equipment.

August sales were led by beverage coolers, with 73 such jobs reported. Water coolers were second on the classified list, with 12; and display and storage refrigerators third with seven installations each. Miscellaneous commercial jobs sold during the month totaled 75.

Reports on storage and display refrigeration sales were made by but one dealer for August, while three dealerships reported their sales of water and beverage coolers and miscellaneous equipment.

Fogel Manufactures Line Of Cooling Room Doors

PHILADELPHIA — Fogel Refrigerator Co. is now manufacturing a complete line of doors for cold storage compartments and walk-in coolers of most standard requirements, according to an announcement made recently by Albert Fogel, sales manager.

8 Commercial Distributors Are Appointed by Kelvinator

DETROIT—Appointment of eight new Kelvinator commercial distributors has been announced by J. A. Harlan, manager of the commercial division of Kelvinator division of Nash-Kelvinator Corp. The appointments cover territory in Massachusetts, Ohio, Michigan, Illinois, Pennsylvania, and Texas.

New distributors are: Martin's Furniture Co., Ipswich, Mass.; J. W. Harsha Oil Co., West Union, Ohio; United Sales Co., Grand Rapids, Mich.; M. W. Hampton, Ashtabula, Ohio; J. H. Nilles Home Appliances, Aurora, Ill.; Punxsy Nash Motors, Punxatawney, Pa.; Coshoccon Electric Co., Ltd., Coshoccon, Ohio, and Warren Electric Service Co., Sinton, Tex.

Weiss Named Manager of Detroit Office for Cutler-Hammer

DETROIT—Elmer F. Weiss has been appointed manager of the Cutler-Hammer, Inc., branch office here to succeed A. R. Johnson, who has been promoted to managership of the company's merchandising sales division.

Mr. Weiss became affiliated with Cutler-Hammer in 1922 after he was graduated from Carnegie Institute of Technology. Since that time he has served in the engineering department of the company's Milwaukee headquarters, in the sales department of the Chicago office, and since 1928 has been in the sales department in the Detroit territory. He is a member of the Association of Iron and Steel Engineers.

Kavanagh to Manage Standard Refrigerator

PHILADELPHIA—Appointment of J. Brooke Kavanagh, formerly sales manager, as general manager of Standard Refrigerator Co., manufacturer of commercial refrigerators and display cases, has been announced recently.

R. E. Frederick, president of the company, is recovering from his recent illness and will soon be back at work, it is reported.

Youngstown Dealer Named For Fogel Equipment

YOUNGSTOWN, Ohio—The Commercial Refrigeration Co. has been appointed to handle Fogel display cases in this territory, reports W. R. Brown of the Pittsburgh Case Sales Co., distributor of Fogel equipment in western Pennsylvania and eastern Ohio.

Mr. Brown also reports that a large commercial refrigeration distributor in Cleveland has added the Fogel line.

Precooling of Fruits Adds to Profits of Calif. Shipper

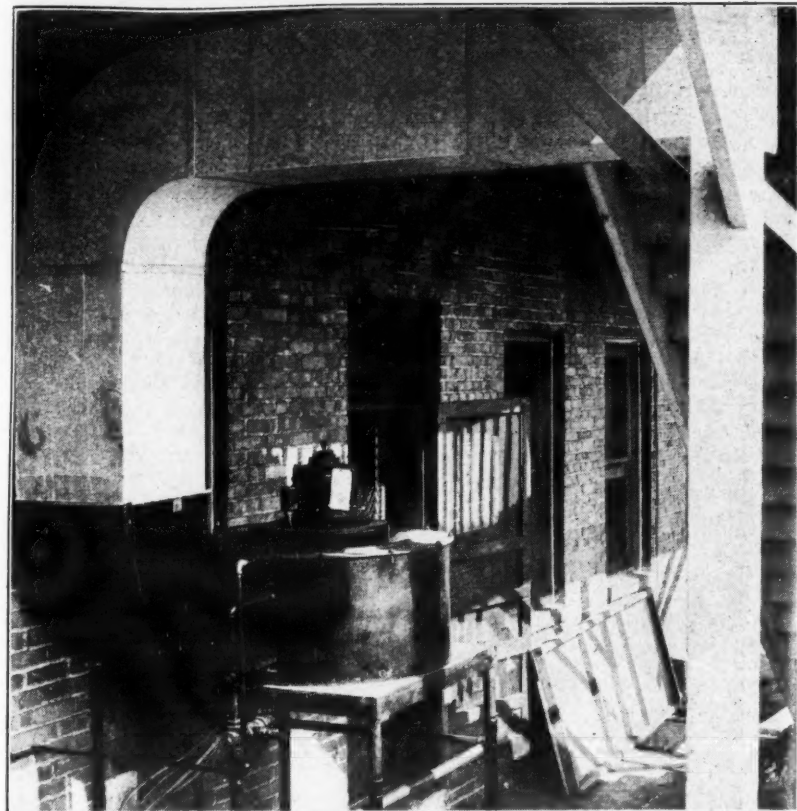
BRENTWOOD, Calif.—Precooling to permit shipment of more matured fruit and better quality packs has markedly increased profits of Diablo Valley fruit shippers in this district, according to Charles B. Weeks, resident manager of Balfour & Gunthrie Co. here.

Binks Catalogs Give Data on Cooling Towers and Nozzles

CHICAGO—Binks Mfg. Co. has just issued a set of catalogs containing engineering data and information on its line of water-cooling towers and industrial spray nozzles.

The complete water-cooling catalog contains a 16-page bulletin on Binks Type K induced-draft cooling towers; a 12 page bulletin on Binks Type FD forced draft cooling towers, a 16-page bulletin on Type R atmospheric spray cooling towers; and a 24-page catalog on the company's line of industrial spray nozzles for water cooling, air washing, and air conditioning.

An Evaporative Condenser Is Installed Out-of-Doors



When the State Market of Columbus, Ohio, installed an air-conditioning system for the comfort of its food-buying customers, the management also put in a G-R hydro-cyclonic evaporative condenser to cut down water costs. The condenser was hooked up to both the compressor for the air conditioner and three compressors refrigerating store equipment.

Evaporative Condenser Serves 4 Circuits In Commercial and Air Conditioning Installation in Food Market

COLUMBUS, Ohio—A G-R hydro-cyclonic evaporative condenser and a 5-ton self-contained Lipman air-conditioning unit, both manufactured by General Refrigeration Corp., are used in the air-conditioning system installed in State Market, Inc. by Cooling & Heating, Inc., Lipman distributor in the central Ohio territory.

The State Market is said to be the first air-conditioned food store in Columbus.

In addition to the air-conditioning

system, a bubbler fountain was installed on the sales floor with cold water piped to the vegetable sprays, according to DeWitt H. Wyatt, of the distributorship.

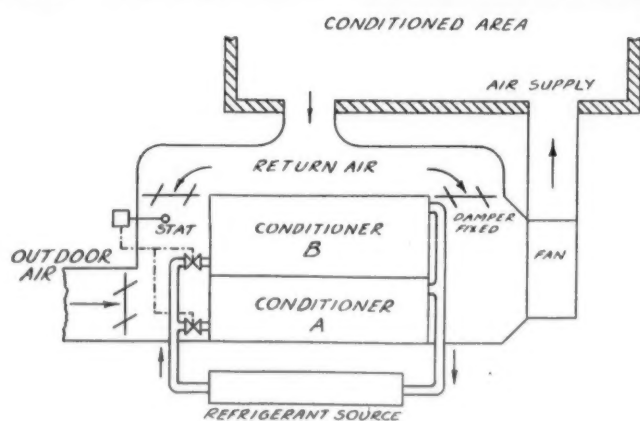
One large circuit in the condenser was piped to the air-conditioning unit, and three extra circuits were provided to condense SO₂ refrigerant from three 1-hp. compressors. These compressors had been in service about five years before this installation was made.

Mr. Wyatt states that the new system of condensing for all of the market's refrigeration equipment, including the air conditioner, will use only 1 cubic foot of water per hour at an hourly cost of 12/100 of a cent, thus effecting a 95% saving in water consumption.

In winter, when the air-conditioner load will be removed from the condenser, no water will be required and the condenser will be drained and operated strictly as an air-cooled unit. This change will not affect operation of the three commercial compressors.

A special Ranco high pressure cut-in switch was used on all compressors to cut in the condenser after any compressors have started.

A SYSTEM WITH FIXED BY-PASSING AND VARIABLE CONDITIONING



IN this System (*) all outside air is invariably treated when necessary and return air may or may not be treated, depending upon the load. Conditioning is effected by varying the refrigerative effect while maintaining a constant proportion between the quantity of return air passing around the conditioner and the quantity of return air passing through the conditioner.

This system provides optional treatment and variable conditioning of return and outside air to provide a final desired temperature and humidity.

Consult our licensees regarding this and many other Auditorium Conditioning Corporation Systems. They have available a book describing these Systems.

LICENSEES

American Blower Co.
Detroit, Mich.

Buffalo Forge Co.
Buffalo, N. Y.

Carrier Corp.
Syracuse, N. Y.

Frick Co.
Waynesboro, Pa.

General Electric Co.
Schenectady, N. Y.

J. O. Ross Engineering Co.
New York, N. Y.

The Cooling & Air
Conditioning Corp.

Division of B. F. Sturtevant Co.
Hyde Park, Boston, Mass.

Westinghouse Electric &
Manufacturing Company
East Pittsburgh, Pa.

York Ice Machinery Corp.
York, Pa.

(*) Auditorium Air Conditioning Systems are covered by many issued patents and pending applications.

AUDITORIUM CONDITIONING CORPORATION

New York Office — 17 EAST 42nd STREET

BE SURE TO SEE INSULITE
PRODUCTS DISPLAYED AT
BOOTH 32, CLEVELAND.

OVER 20 YEARS

OF SUCCESS WARRANTS YOUR CONFIDENCE IN INSULITE FOR ALL COLD STORAGE INSULATION

INSULITE wood fibre thermal insulating materials have been proved on the job for almost a quarter of a century.

Insulite SEALDSLAB, moisture-proof insulation for low temperature refrigeration, is especially adaptable for use in freezers, meat, beer and creamery coolers; milk cooling tanks; fruit and vegetable storage rooms. SEALDSLAB has an asphalt impregnation which forms a complete seal or

envelope, giving it a high degree of moisture resistance. The envelope or seal also serves as a base for subsequent coatings on the job.

Insulite Cold Storage Insulation, like SEALDSLAB, is manufactured from tough durable fibres of northern woods. It has inherent strength plus high insulation value. It will not rot, crumble or disintegrate in service. The Insulite Company, Minneapolis, Minn.

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for INSULATION

USE THE ZENITH REFRIGERANT FILTER

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FREON OR METHYL CHLORIDE
REFRIGERATORS

Because

Zenith elements provide finer spacings (.002") than any asbestos sack or wire screen filter.

Easily Installed
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Permanent Protection

No Wool or Asbestos to Rot and Wear Out

Corrosion Proof—Leak Proof

Ample Capacity

Positive protection against dirt in Expansion Valves, Solenoid Valves, Capillary Tubes and other liquid control devices.

ZENITH CARBURETOR CO.

Subsidiary
BENDIX AVIATION CORP.
Detroit, Michigan.

Dessent Solves Beer Cooling Problem With New Cooler & Insulation of 85-Ft. Line

CHICAGO — Dessent Engineering Co., Chicago Copeland distributor, eliminated "wild beer" trouble and turned a losing beer business into a profitable one by the ingenious use of proper equipment and novel installation methods in the Auditorium hotel tavern room.

The original installation of beer-cooling equipment was made about five years ago. Due to structural design in the hotel it was necessary to run the beer lines 85 feet from the pre-cooler in the basement to the coil box at the bar. These beer lines were run through the kitchen where cooking appliances ran the temperature up to around 120° F.

Needless to say this high temperature played havoc with the beer causing it to be wild and sour during slow periods. (It is commonly known that beer begins to lose its CO₂ content at around 55° and starts to sour at 70°.)

Dessent's problem was to convince the owner that he could install a system that would provide good beer at the top, even though the lines must run through the hot kitchen. Finally a contract was signed on a rental-per-day basis for a five-year period, eliminating any gamble on the part of the customer.

The installation consists of a Temp-rite cooler in the coil box, a Copeland condensing unit in the basement (85 feet away), and a beer (air) pump.

To prevent the original difficulty of the beer warming up in the lines which extend through the kitchen, the six beer lines and the two refrigerant lines were enclosed in a flexible metal conduit. The flexible metal conduit was then wrapped with black water-proof paper.

Over the water-proof paper is a 1-inch layer of standard hair-felt, butt-jointed at the seam and tightly wrapped with twine. Another 1-inch layer of hair-felt was applied over the first layer and tied on with twine. Over the hair-felt is a layer of treated Sisalcraft paper cement at the laps, following which an outside covering of Silvercote paper was applied.

The 2 inches of hair-felt, which was especially adaptable to this installation due to its flexibility, provides sufficient insulation so that the beer is maintained at 40° throughout the long run.

The job has been in operation for more than three months and the management boasts an increase in bar profits of 12%, according to Dessent officials.

Dessent took its insulation problem to American Hair & Felt Co. They convinced the distributor and the customer that the lines could be satisfactorily insulated. In this case the insulation engineer helped the service engineer to obtain a job which was profitable to all concerned.

Kold-Hold Units Help Preserve "Kolderols" Enroute to User

PHILADELPHIA—Two Kold-Hold cooling units installed in the truck body plus a Baker ammonia compressor permanently mounted in the truck's garage serve to refrigerate the ice truck built for Logan Ice Mfg. Co. by Keystone Wagon Co. here.

The Logan Co. uses this truck to deliver "Kolderols," or small cylinders of ice for individual use, to hotels, restaurants, taverns, etc. Therefore, adequate refrigeration had to be supplied within the truck so that the small portions of ice could be delivered before they had commenced to melt.

Under the new arrangement the temperature at the end of the day's run is always several degrees below the melting point of ice, so absolutely no loss is experienced through shrinkage.

Inside dimensions of the truck body are: length 102 in.; width 56 in.; height 50 in. As many as 84 bags of ice are carried at one time. The truck body, first of several to follow, is mounted on a Diamond T chassis.

Chicago Conditioning Firm For Kelvinator Opens New Showroom

CHICAGO—Formal opening of the new showroom of Murphy & Miller, Inc., Kelvinator air-conditioning and automatic heating equipment distributor, at 1331 S. Michigan Ave., was held recently with President George W. Mason and Vice President H. G. Perkins of Nash-Kelvinator Corp., and H. T. Hollingshead, Chicago Nash distributor, as honor guests together with representatives of Chicago architectural firms, builders, and real estate and mortgage firms.

Air-conditioning department of Murphy & Miller is headed by E. J. Bertrand, Jr.; the automatic heating department by E. R. Wurgler; residential air conditioning by C. S. Rouzer; the engineering department by R. M. Wineman, and the service department by W. E. Hough.

11 Cooling Jobs Sold in Seattle During First Half of 1937

SEATTLE—Eleven commercial air-conditioning installations, totaling 86 hp., were made on the lines of Puget Sound Power & Light Co. during the first six months of 1937, reports C. T. Bakeman, commercial and industrial sales director.

In 1936, first year that any complete air-conditioning installations were connected to the utility's lines, one 6-hp. hospital installation and 11 office installations, totaling 17 hp., were made, Mr. Bakeman said.

Refrigeration of Shrimp to be First Task of New Alabama Quick-Freezing Plant

MOBILE, Ala.—Shrimp refrigerated in half the time required by present methods will be provided by the quick-freezing unit being installed in the million dollar cold storage plant being completed at the Alabama State Docks here.

A quantity of fresh shrimp will be sent to Mobile soon to be quick-frozen, packed into containers, and stored until ready for market, according to A. A. Richards, manager of the plant.

The unit being installed is costing approximately \$13,000. Chief feature of the equipment is the steel belt conveyor 6 feet wide and 36 feet long, which carries the shrimp and other products through the freezer

proper where a temperature around 0° F. is maintained.

The shrimp, according to Mr. Richards, can be frozen solid in less than an hour, about half the time taken by plants using older methods. The new unit will have a capacity of one ton an hour, with reserve space for 500 tons or 1,000,000 lbs.

While shrimp will be the first product handled, the quick-freezing unit will be utilized later to conserve supplies of fresh vegetables and fruit produced in this section.

The shrimp season is just getting under way. Government figures show that the waters of Mobile and Baldwin counties contribute approximately 8,000,000 lbs. of seafood annually, according to Mr. Richards.

Herring, Mainstay of Swedish Smorgasbord, Preserved in G-E Equipped Warehouse

STOCKHOLM, Sweden—To store herring, mainstay of Swedish smorgasbord, the A. B. Sveriges Forenade Konservfabriker has installed six General Electric condensing units and six G-E conditioned-air cooling units in its fish warehouse.

Smorgasbord, prelude to every Swedish meal and becoming increasingly important the world over, is the collection of appetite teasers which outshines the most elaborate array of canapes and hors d'oeuvres. Herring is one of its all-important constituents. The fish is pickled, spiced, salted, soured, trussed, sliced

into bits, or set alone on a platter.

Herring fishing, processing, and canning constitute one of the most important domestic and export businesses in Sweden.

The General Electric equipment was installed in the warehouse by the G-E Stockholm distributor.

In the warehouse 3,000 barrels of Iceland herring are stored. Merchandise for export to America is also stored here. The company has a canning capacity of 8,000,000 cans.

Inside dimensions of the refrigerated space are 24 meters long by 18 meters wide by 2 meters deep.

Bakery Finds Refrigeration Cuts Waste & Allows Proper Production Control

BALTIMORE—Installation of Federal refrigeration equipment in the Ebersberger bakery here has enabled Mr. Ebersberger to minimize the amount of material which he is forced to waste and to control his production in accordance with the demands of his customers.

Before Mr. Ebersberger bought the refrigerator he necessarily had to bake all of his dough shortly after mixing it up. Then if business was not as good as he had anticipated there would be a large amount of left-over baked goods which was no longer salable as "strictly fresh."

Now, however, Mr. Ebersberger keeps his dough in the refrigerator and bakes it only in accordance with business demands. He has found that

the dough keeps perfectly for 36 hours in the refrigerator, so it can be held over until the following day if business has been slow.

The refrigerated box measures 108 x 84 x 40 in. It is insulated with 3 in. of cork and has 74 racks on which to place trays of dough. These racks are arranged in two vertical rows with open storage space in the center compartment.

The box is refrigerated by a 12 x 18 x 67-in. Fed-R-Fin coil connected to a ¾-hp. condensing unit.

Tests have shown an average temperature of 37.7° F. in the top and 41.4° F. in the bottom of the storage compartment, with a relative humidity of 80%. The machine operates about 50% of the time.

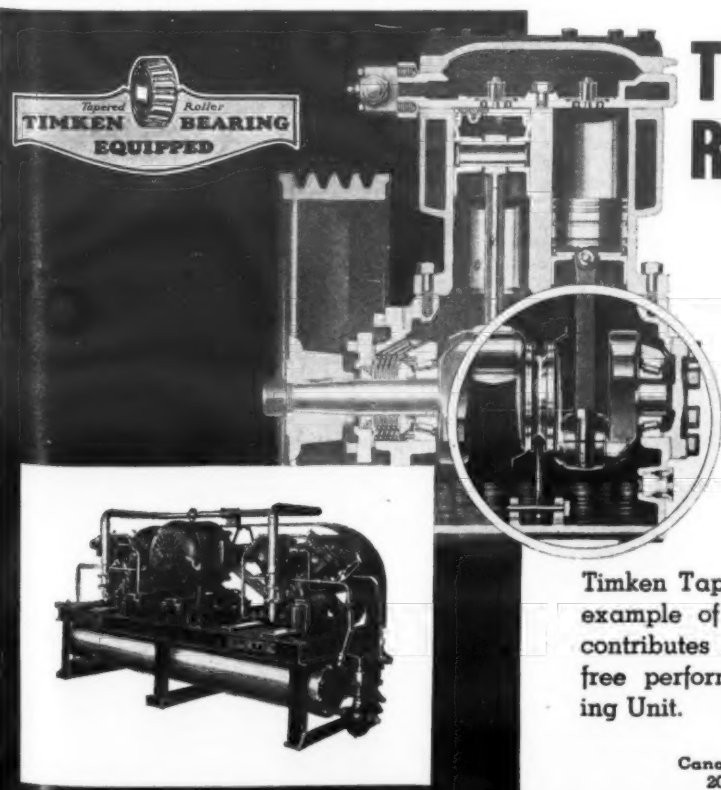
Mushroom Plant Temperature Held Correct by G-E System

WEST CAMP, N. Y.—To provide a correct temperature of between 65 and 70° F. for spore germination in the mushroom spore room of the KB Products Co., Inc. here, equipment consisting of an EC-18 "conditioned air" evaporator with a 1½-hp. condensing unit was installed by A. Wayne Merriam, Inc., Schenectady, General Electric distributor.

Woldrich Heads Portland, Ore. Branch for Control Maker

PORTLAND, Ore.—F. J. Woldrich has been placed in charge of the newly opened local office of Cutler-Hammer, Inc., Milwaukee, manufacturer of electrical equipment, according to T. N. Bristow, district manager of the company.

Mr. Woldrich joined the Cutler-Hammer staff in 1933.



TIMKEN TAPERED ROLLER BEARINGS

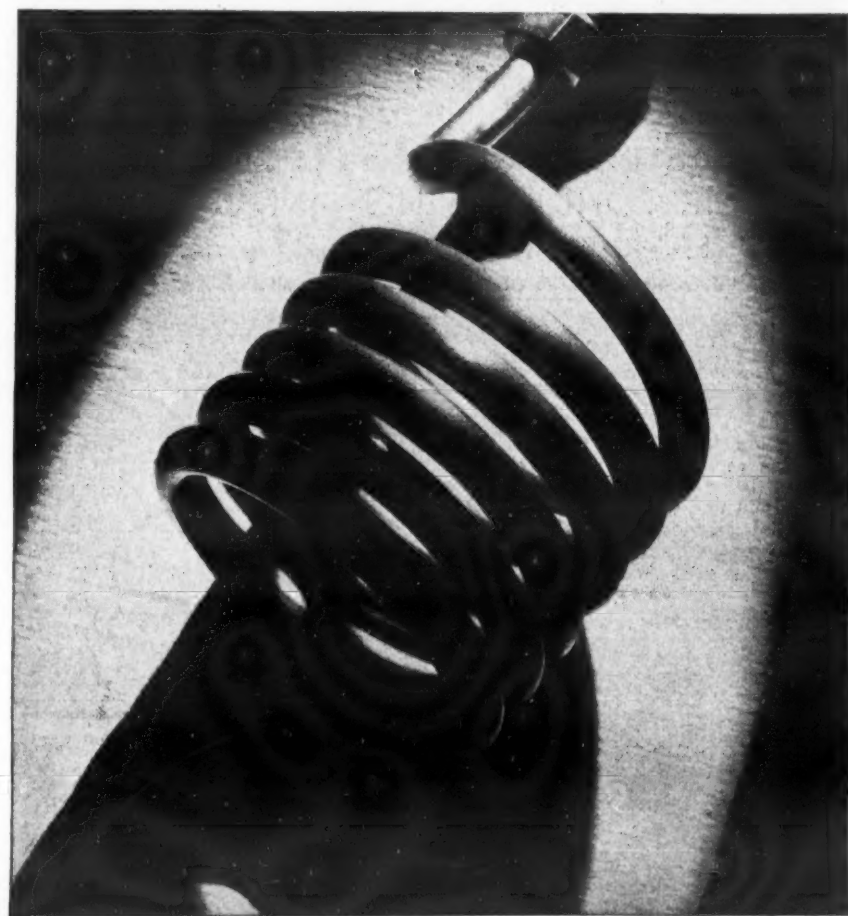
TIMKEN, TAPERED, ROLLER BEARINGS have been proven by years of use in leading American automobiles. In your CURTIS COMPRESSOR, special, sound-proof type Timken Bearings add to the efficiency, smooth operation and long life. Unlike other types of anti-friction bearings, they provide for easy outside adjustment for wear if necessary.

Timken Tapered Roller Bearings are another example of the advanced engineering that contributes so much to efficiency and care-free performance of the CURTIS Condensing Unit.

Represented in Canada by
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ontario

CURTIS

CURTIS REFRIGERATING MACHINE COMPANY
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue, St. Louis, Mo.



Bundy Tubing Contributes Dependability

Great strength and ability to resist vibration are inherent qualities in Bundy Tubing. It is by virtue of these characteristics that Bundy Tubing is making an important contribution to the dependability and durability of automobiles, refrigerators, and the many other mechanisms in which these qualities are taken for granted by the purchaser.

Bundy Tubing is rolled from copper-coated steel; both inside and outside surfaces are clean and free from oxides. It is available in a wide range of sizes, in lengths or completely fabricated. Quotations will be gladly made from your blueprints or samples.

BUNDY TUBING CO.
DETROIT

Summer Air Conditioner Is Drafted for Year-Around Service in Office

MILWAUKEE—Built for summer use, the Carrier portable air conditioner installed in the office of Harry W. Kaminsky, president of the Auto Acceptance Corp., sales and financing company, has been drafted for year-around work despite the difference in outside temperature.

After a summer of comfort, Mr. Kaminsky refused to part company during the winter with his portable air conditioner. He found that he could use it to refresh the atmosphere in his large office the year around.

Grand Rapids Studies Safety Ordinance

GRAND RAPIDS, Mich.—Expressing doubt that any provision in city ordinances provided for inspection of installations of air-conditioning units, Fire Marshall George Boughner advised the city commission, through City Manager C. S. Johnson, that air-conditioning systems installed and being installed in downtown buildings may be creating a fire hazard.

Mr. Boughner pointed out that when combustible ducts are used, fire may be spread all through a building, and suggested fireproof ducts with cut-off dampers as a precaution.

The matter was referred to the ordinance committee for study.

THE BUYER'S GUIDE



BARE COMPRESSORS and COMPLETE UNITS

All types for service replacement and new installations. . . One, two and four cylinder models from 1/4 h.p. to 20 h.p. . . For Sulphur Dioxide, Methyl Chloride or Freon. Write for new catalog—a valuable reference for assemblers and service companies.

MERCHANT & EVANS COMPANY
Philadelphia, Pa., U.S.A., Plant at Lancaster, Pa.

HIGHEST EFFICIENCY

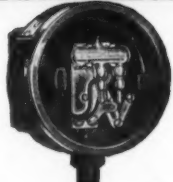
Filtrine

FILTERS & COOLERS
SHELL & TUBE—WATER COOLERS
CONDENSERS
AIR CONDITIONING—INDUSTRIAL
FILTRINE MFG. CO., Brooklyn, N. Y.

MARSH Refrigeration Instruments

Buy service—not service calls

The Marsh merkurist electrical cut-out has earned its reputation as the motor control that always works right. It is constructed with bronze bourdon tube for any pressure medium that will not corrode brass, and with steel bourdon tube for ammonia and carbon dioxide. When safety is at stake only the best equipment is good enough—and that means Marsh. Write for new catalog describing Marsh gauges, thermometers and recorders.



JAS. P. MARSH CORPORATION
2067 SOUTHPORT AVENUE, CHICAGO

WRITE FOR
NEW CATALOG

A tight system calls for FITTINGS THAT WILL STAY TIGHT

IMPERIAL S. A. E. flared fittings have been setting a mighty fast pace in the air conditioning and refrigeration field . . . and their rapid acceptance by installation and service men is based on results. Imperial fittings are tight when the job is finished and they stay tight.

Write for catalog covering complete listing of sizes and prices.

IMPERIAL BRASS MFG. CO., 565 S. Racine Ave., Chicago



S. A. E. FLARED FITTINGS
Brass forged nuts, tees, elbows and crosses—will not crack. Heavier and stronger than standard—non-porous—no seepage or season cracking. Tees and elbows have flats for wrench.

IMPERIAL Fittings

VALVES • TOOLS • CHARGING LINES • FLOATS • DEHYDRATORS • STRAINERS

ORDER FROM
YOUR JOBBER



Dayton V-Belts are the logical choice for all types of appliances, because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating. A nearby distributor carries a complete stock.

THE DAYTON RUBBER MANUFACTURING CO.
DAYTON, OHIO
WORLD'S LARGEST MANUFACTURER OF V-BELTS

Dayton
V-BELTS



THE AIR AGE

BY F. O. JORDAN

Who Competes With Whom And Why A United Front?

Competition to the right of us, competition to the left of us! We have competition all around us because competition is the soul, just as private ownership is the body, of the capitalistic system. America now is, and forever will be, a capitalistic nation because Americans are a competitive race. It is their very breath of life regardless of whether they, as individuals, have much capital or little. Their reason for living is their in-born love of the individual freedom of which not the remotest vestige remains under any other economic or political system.

Nor does this competitive spirit cease with the individuals within the various industrial units. Its energizing influence predominates throughout the entire competitive economic structure. While individuals are competing for the best jobs within the corporation, the corporations compete for the best position within their industry. Even the various industries, which comprise the economic structure, never tire in their competitive struggle for supremacy.

What is the result, do you ask? Staring you in the face is the answer. It is in America's unsurpassed economic position. It is in living standards unequalled elsewhere in the world. The American workman goes to his daily task in an automobile while his British brother pedals a bicycle. His counterpart in Europe's regimented industries rides a pair of straw-stuffed wooden shoes to his drudgery.

We say that "America is the land of opportunity?" Correct. But opportunity is the result, as well as goal of competition. It comes from that never-ending urge to do one's utmost, which activates every unit of American capitalistic life, from single individual to entire industry.

Too well known to require elucidation is the competition between individuals. No less familiar is the competition between corporate members of the same industry. The competition between the industries however, is less generally recognized.

It may appear to the casual thinker, that competition between industries does not exist, because the function of each is to fill a different human need. But how many of the following would you like to have:

- A new refrigerator,
- A new automobile,
- A new radio,
- A new air-conditioned home,
- A trip somewhere,
- More and better food,
- Bigger and better entertainment,
- etc.?

Can you buy them all? If not, you must choose between them. This immediately makes competitors of the various industries represented.

If you buy the new car, perhaps you cut down your grocery bill. If you invest in the health and comfort of air conditioning, you may be forced to postpone a trip to Europe (and thereby display rare good judgment.)

Thus it is that competitors in one industry sometimes "bury the

hatchet" for a time and cooperate in a unified publicity front. Since such "educational" programs cost real money, we may be safe in assuming that continued efforts along the unified front of an industry have been proven to be effective.

The A.C.M.A.

An example of an industry in which the leading members have pooled their resources for the purpose of competing with other industries, is seen in the efforts of the A.C.M.A.

The Association of Air Conditioning Manufacturers maintains full-time salaried employees whose functions include:

The creation and nurturing of public desire for air conditioning and the fostering of air-conditioning-mindedness.

General education of the public regarding air conditioning.

Compilation of sales statistics and market data.

Formulation and direction of programs for the benefit of the air conditioning industry as a whole.

Fostering of constructive legislation and prevention of ill-advised laws and codes.

Standardization of parts, terminology, etc.

The chief purpose and aim of the discussion thus far, has been to indicate the importance of the last named item, to wit, "Standardization." For now that we have seen the importance of solidarity and coordination in each industry of the American capitalistic family of industries, we must realize the obvious impossibility of unity without standardization in many respects.

For example, many prospective customers for air-conditioning equipment have been frightened into postponing their purchases by the wide variations in load estimates and bids submitted by the various competitors on the same project. Somebody must be wrong, they reason, when so much variation exists. And when the successful bidder is wrong in his estimating methods, an unsatisfactory installation is almost a certainty. Obviously, such installations cause serious damage to the entire industry.

Probably the most important, as well as the most difficult, problem now confronting the whole industry is that of lowering the costs of air conditioning. Lower costs would undoubtedly create a sales volume great enough to elevate the air-conditioning industry to its proper place among the leading industries.

At present, the costs of making the load estimate, selecting the equipment, and designing the system constitute a considerable proportion of the price of the installation. Complicated and unstandardized methods of performing such functions are partly to blame. Another reason lies in the common practice under which each of eight or 10 bidders must perform all of this expensive work, although only one bidder can hope to land the job.

The cost of such wasted free engineering service (performed on jobs lost) must be added by each bidder to the overhead cost of contracts

secured. This type of waste is often used as an argument against the capitalistic system.

The Consulting Engineer

Most of this waste, resulting from duplication of work, could be eliminated by adopting a method which is the practice common in certain other industries. One competent consulting engineer is commissioned to make the load estimate, select and design the general type of system for each project. Then all competitors are allowed to bid upon the same set of specifications.

An arrangement whereby a given project might be estimated and designed once instead of 10 or more times (as under the present practice described above) would indicate a saving of 90% in field engineering costs. The total field engineering cost is a big expense if it is incurred by each of the 10 bidders. It may exceed the total amount of the contract price finally awarded to one of the bidders. Thus it would appear that the acceptance of the consulting engineer should be of material assistance in effecting a reduction in consumer costs.

However, the consulting engineer will not be generally accepted until standardized field engineering methods for him to use have been adopted by the industry. Otherwise his decisions will be disputed by all bidders except the one whose methods the consultant has used.

Therefore, an immediate step is suggested for ACMA in its commendable efforts toward the unified front so necessary for success in the battle of the industries. We suggest that they pool their data on minimum comfort requirements, sun effect, "lag" effect, probable occupancy concentrations, storage effect of different types of building construction, etc., that they obtain additional data if necessary, and formulate simplified methods acceptable to all.

Perhaps discussions of this proposal will be helpful to all concerned.

Air-Conditioning Course Added to Curriculum Of N. Y. State School

ALFRED, N. Y.—A course in air conditioning is included in the two-year course in technical electricity which will open Nov. 1 at the State School of Agriculture here. The course will treat of cooling and heating equipment necessary in air conditioning homes and commercial establishments, as well as moisture control apparatus to regulate humidity.

Cooling phase of the course will center around refrigeration and condensing units and cooling coils, with the related circulation controls. Heating principles, types of boilers, thermostatic controls, humidistat and aquastat operation, and the circulation of air as influenced by each of these are to be studied in the heating phase of the program. Air filtration and moisture content as they affect personal health and economy of operation will also be considered.

The student's time will be divided equally between theory and practice. Four hours daily will be spent in the laboratory or shops, and four hours in related technical work. Tuition will be free to residents of New York state, while out-of-state students will be charged a flat \$25 fee.

William Harrison, former chief of the traffic signal division of the Crouse Hinds Electrical Co., will be instructor for the course.

We'll Be There—

- WHERE:- Booths 11 and 12 - Stevens Hotel Exhibit Hall - Chicago
- WHEN:- November 3 - 4 - 5
- WHAT:- Fourth Annual R.S.E.S. Convention
- WHY:- Because It Will Be "Better'n Ever"

Hope To See You

PEERLESS of AMERICA, Inc.

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Main Factory—General Offices
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Pacific Coast Factory
3000 S. Main Street
Los Angeles

PEERLESS JOBBERS IN ALL PRINCIPAL CITIES

BUY PEERLESS FOR PERFORMANCE

AIR CONDITIONING

York Develops Line Of Ammonia Units

YORK, Pa.—Recently introduced by York Ice Machinery Corp. is a line of new high-speed, multiple-cylinder, ammonia compressors ranging from 100 to 800 tons of refrigerating effect per unit.

Designed for synchronous motor drive, this machine may also be adapted for operation with any type of prime mover. Compressor housing is of the fully enclosed type with crankcase and outboard bearing cast separately.

Cylinders are cast in pairs and are designed to provide large and unrestricted gas inlet and outlet ports. Crankshaft is hammer forged of selected steel, drilled for force feed lubrication.

Pistons are of the double trunk type with ample thrust surfaces lined with a high grade anti-friction metal on all sizes except 10-inch bore. Connecting rods are of forged steel (except the 8-inch and 10-inch stroke which have the standard malleable iron rods) with crank end of adjustable marine type. Wrist pins of low carbon steel, case hardened, are fitted with bronze bearings.

Suction and discharge valves of high speed, low lift type, are of ample size to insure low gas velocity. Suction valves are located in pistons; discharge valves in safety heads designed to relieve excessive pressures.

Main bearings are of large area and consist of one center and two end bearings in crankcase with separate outboard bearing—lined with babbit metal, bored and shaped to fit. Design includes cap with shim adjustment and lower shell fitted in circular recess in the housing.

Lubrication is automatic and of dual type. A forced feed recirculating system with geared oil pump at end of crankshaft and with complete filtration on discharge side of pump is said to provide positive pressure lubrication of main bearings, crank pins, piston pins and all other moving parts within the compressor.

VIRGINIA SMELTING CO.
WEST NORFOLK VIRGINIA
EXTRA DRY
ESOTO
LIQUID SULPHUR DIOXIDE
V-METH-L
VIRGINIA METHYL CHLORIDE
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ASK FOR NEW
BULLETIN 144C
"T" Series Thermo Valves
ALCO VALVE CO., Inc.
ST. LOUIS, MO.

A CASTLE of Comfort in DETROIT
BARLUM HOTEL
CADILLAC SQUARE AND BATES STREET
810 OUTSIDE ROOMS \$2.50
FROM 2 DAILY
ALL WITH BATH

Airtemp Markets 1938 Winter Conditioners

DAYTON—A new line of heating and air-conditioning equipment for homes of practically every size and type has been announced by Airtemp, Inc., subsidiary of Chrysler Corp. This new line of equipment is now being shown by Airtemp dealerships throughout the country.

One of the leading items in the 1938 Airtemp line is the new oil-burning winter air conditioner known as Model OF-100. This model, while having a capacity of only 100,000 B.t.u., is said to have all the advantages of larger winter conditioners and is designed for use in homes in the lower price bracket.

OF-100, like other Airtemp winter air conditioners, provides not only heating but filtering, humidification, and circulation of the air. Both first cost and operating cost of the new unit are said to be low.

Features of the new Airtemp winter conditioners include: an adjustable humidifier which automatically adds the correct amount of moisture to the air; specially designed extra-surface heat chambers; a suspended fire box which permits air to flow beneath the fire box as well as on the sides; a heavy one-piece steel base which eliminates the need of special foundations; oversize filters; and a dynamically balanced fan.

All sheet metal surfaces of the units are Bonderized to prevent rust.

Improvements also have been announced in Airtemp's oil burner line for 1938. Among features offered by these new units are: an automatic "carburetor" which prevents after-drip at the nozzle when the burner is shut off; a new draft chamber and oil mixer to facilitate combustion; a "focused" flame which may be adjusted to fit any size or style of fire box.

For steam, vapor, and hot water heating systems, the company is producing a complete line of oil and gas burning boilers. Efficiency and economy of these boilers is said to be increased by a special combustion chamber surrounded by water, a combination of vertical and horizontal flue passages which extract the last usable heat from escaping gases, quick-heating water passages, heavy asbestos lining, and air-tight doors. A built-in water coil supplies hot water for household use.

Advertising for the line, departing somewhat from the traditional technique, is deliberately avoiding appeal to the general reading public and is concentrating only on those people who are actively interested in heating and air conditioning in their homes.

In an attempt to clear up the confusion and misunderstanding in the minds of prospective purchasers of air-conditioning equipment, Airtemp copy will be packed with product information and informative cutaway drawings.

Airtemp advertising is being spread through the following national and business publications: American Home, Architectural Forum, Architectural Record, House Beautiful, House and Garden, Life, National Geographic, and National Real Estate Journal.

Pacific Produces Air Circulating Unit

CHICAGO—A new air circulator, designed to be installed in the window and to provide filtration, circulation, and air cleaning, has been announced by Pacific Mfg. Corp.

Known as the Airvent, the device is intended for use in homes, offices, shops, hotels, hospitals, and other institutions in which controlled ventilation and air filtration are desired. It is a companion product to the Pacific Conditionaire air-conditioning unit.

Doors and windows are to be kept closed with the Airvent in use, which cuts down street and traffic noises. Filters used in the unit are said to be capable of removing 98% of summer dust and winter soot from the air, and to be 99% efficient in removing plant pollen.

Fox Designs Units for Winter Conditioning Stoker Service

ELYRIA, Ohio—Recently announced here by the Fox Furnace Co., is their new "S" line of winter air-conditioning equipment designed expressly for automatic stoker service.

The "S" series was developed through the collaboration of Fox heating engineers and stoker experts, and is declared to conform both to the field requirements of the heating installation and to the best accepted stoker practices as well.

The "S" series is made in two sizes, a 24-inch model with combustion rate of 17½ lbs. of coal per hour and a heating capacity at the register of 150,000 B.t.u. per hour, and a 27 inch model with combustion rate of 23½ lbs. of coal per hour and a heating capacity at the register of 200,000 B.t.u. per hour.

Judging from this range of capacities, the line appears to be intended for homes ranging from approximately five to 15 rooms.

Either hopper or bin feed type of stoker can be installed in either of the "S" models from front, rear, either side, or below base of the unit through openings, provided at the factory, in the heating element and cabinet.

Around the openings in the heating element, steel chutes are welded. To these chutes can be attached steel chute extensions which provide an air tight housing for the section of stoker screw tube which is within the air conditioner.

In bin feed, side to side installations, the blower is placed on an angle iron platform to permit stoker screw tube to pass under it.

Compact New Oil Furnace for Small Homes Is Introduced by General Electric

BLOOMFIELD, N. J.—A new small oil furnace, designed for installation in small homes where space is at a premium, has been developed by the General Electric air-conditioning department.

Warmth without bulk is the design keynote of the new furnace, known as type LA-3, which both heats the house and supplies hot water by utilizing the same method of burning oil as the present larger types. It was styled by Ray Patten, one of America's foremost designers, and in appearance departs radically from conventional types of home heating equipment.

The new furnace is for operation with steam, vapor, or hot water heating systems, or for indirect heating with air conditioners, either singly or in multiple, depending on heating requirements. It has been constructed and tested in accordance with the A.S.M.E. code for low pressure heating boilers, and is approved by Underwriters' Laboratories.

It has a maximum rating, at the boiler outlet, of 100,000 B.t.u. per hour, equivalent to steam radiation of 417 square feet or hot water radiation of 667 square feet. It will supply 150 to 300 gallons of domestic hot water per day, for steam and hot water systems, depending on the size and location of the storage tank.

Boiler is of welded steel construction and is completely equipped with an indirect heating coil for domestic hot water, safety relief door, safety valve, pressure gauge, low water cut-off, and water level indicator for steam furnaces, and an altitude gauge and thermostat for hot water furnaces. It is of the vertical type,

with concentric flue surfaces, and firebox is of steel. A 1-inch asbestos air cell provides insulation.

Controls include a master control and integral flame detector mounted inside the jacket, a limit control mounted on the domestic hot water coil housing, and for steam furnaces, a low water cut-off mounted on the limit control panel. An electric ignition is employed for starting.

During the starting cycle the flame detector permits continued oil flow only if combustion is properly established. In the event of flame failure after combustion is established, the motor compressor is immediately stopped and the oil valve closed.

Low water cut-off is of the improved magnetically operated float type that eliminates use of a packing gland or bellows.

Styling of the new furnace follows advanced lines with no unsightly pipes or other projections, necessary connections being made at the back where they will ordinarily be out of sight. The furnace is intended to meet requirements of smaller modern homes which confine their heating equipment to a small room on the ground floor, or make it a part of interior basement decoration.

Burgess Equips Two Stores In Elmira, N. Y.

ELMIRA, N. Y.—Harry R. Burgess installed Delco-Frigidaire air conditioning in the H. Strauss, Inc., clothing store, and in Deister & Butler, jewelers. The stores occupy a new modern building on North Main St. here.

How to Select and Install Air Conditioning Systems

By T. H. Mabley

THIS is a series of 25 articles on AIR CONDITIONING, written by Mr. T. H. Mabley, chief engineer, Mechanical Heat & Cold, Inc., Detroit, Mich. These articles are "case histories" of installations engineered by Mr. Mabley in his regular work as chief engineer for a large Detroit air-conditioning contractor and distributor. They should be of real value to any individual who has any part in the estimating, engineering, and installation of air-conditioning equipment—also to prospective purchasers or users of air-conditioning equipment.

The "cases" start with the simpler installations such as a single office and continue on through to more complicated installations, such as process jobs and the air conditioning of auditoriums and department stores.

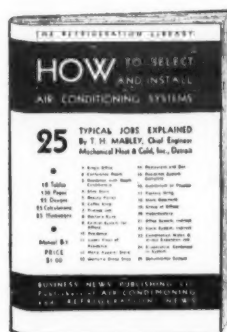
Simple methods are given for calculating heat gain and loss for each job, determining design conditions, selecting equipment, and locating and installing equipment. Direct and indirect systems are used in these typical installations and the advantages and disadvantages of each method are given.

While all the known fundamental functions of air conditioning are desirable, there are certain applications and conditions where some of the functions are not considered necessary nor economical to install and operate. High relative humidity, such as may be obtained with winter humidification might cause show windows in a store to cloud up, thus impairing the display. For such an application the summer functions are purchased, and winter humidification is omitted.

In a process job all of the functions may be utilized as the conditioning equipment is required to maintain predetermined year-around temperature and humidity within close limits.

Conditioning an auditorium where large crowds of people will be present for two or three hour periods has its particular problem while the design limits for a department store with its heavy electric light load require expert attention. All of these and other factors that must be considered are discussed for the individual application, and the selection of equipment is based upon the load calculations for predetermined design conditions.

The procedure followed on these 25 typical jobs may be studied by the contractor, dealer, engineer, etc., who is figuring a job and much valuable information may be gained that may save hours of time and possibly prevent expensive mistakes.



25 Typical Jobs Explained

1. Single Office
2. Conference Room
3. Residence with Room Conditioners
4. Shoe Store
5. Beauty Parlor
6. Coffee Shop
7. Process Job
8. Doctor's Suite
9. Central System for Offices
10. Residence
11. Upper Floor of Residence
12. Men's Apparel Store
13. Women's Dress Shop
14. Restaurant and Bar
15. Residence System Complete
16. Auditorium or Theater
17. Factory Wing
18. Store Basement
19. Group of Offices
20. Haberdashery
21. Office System, Indirect
22. Store System, Indirect
23. Combination Water & Direct Expansion Job
24. Evaporative Condenser in System
25. Dehumidifier System

136 pages

\$1.00 per copy

Business News Publishing Co., 5229 Cass Ave., Detroit

Appliance Buyers Get Chance to Have Their Money Returned

MOLINE, Ill.—During a 10-day promotion scheme recently sponsored by several Moline and East Moline appliance dealers, purchasers of refrigerators, washers, or ironers, were given tickets which, when signed and deposited with the dealer, made them eligible to receive their appliance free of charge.

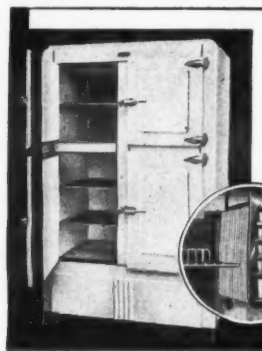
Two drawings were held at the end of the period, one for refrigerator tickets and one for laundry.

Dealers participating were: Block & Kuhl Co. (Frigidaire and Electrolux refrigerators, Easy wash-

ers); De Gheselle's Radio & Appliance Store (Westinghouse refrigerator, Dexter Washer); East Moline Home Appliance Co. (Stewart-Warner refrigerator, Easy washer); Roy A. Fude Co. (Norge refrigerator and washer); Home Appliance Co. (Leonard refrigerator, ABC washer).

Home Supply Co. (Stewart-Warner refrigerator, Thor washer and ironer); Lofgren's (Westinghouse refrigerator, Speed Queen washer); Moline Furniture Fair (Crosley refrigerator); Montgomery, Ward & Co. (America's No. 1 refrigerator, Ward's Master washer); New York Store (Kelvinator); Peoples Power Co. (General Electric refrigerator, Voss washer); Sears, Roebuck & Co. (Coldspot refrigerator, Kenmore washer).

THE BUYER'S GUIDE



A New "Self-Contained" Refrigerator!

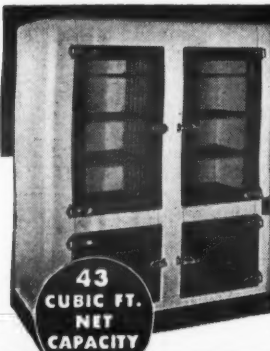
Offering 30 cubic feet of storage space, through the use of modern space saving construction and extra height shelves.

Space is provided for Condensing Unit, and the installation of an Ice Cube Maker, which, when combined with the standard back wall coil, eliminates all danger of a drop in temperature or humidity, no matter how heavily frosted the ice maker becomes.

Model No. 30 "Self-Contained" Refrigerator available with solid or glass display doors in top section, choice of gleaming white porcelain, or DuLux finish.

A Similar 6-door Refrigerator—Model No. 45—with 45 cu. ft. of storage space is also available. Write for Bulletin SC-3045.

GLOEKLER MANUFACTURING COMPANY
ERIE, PENNSYLVANIA
SALES OFFICE, 425 FOURTH AVENUE, PITTSBURGH



TYLER'S WELDED STEEL REACH-IN BOX

SALES SENSATION OF 1937

Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" cooling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.

TYLER Sales-Fixture COMPANY
DEPT. EX. NILES, MICHIGAN

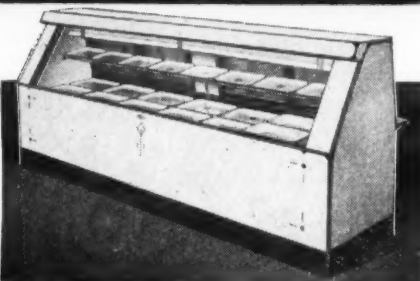
DISTRIBUTORS WANTED

DISTRIBUTORS! Increase your sales and earnings on electrical refrigeration equipment by selling the Percival Line. Percival equipment meets every requirement of the modern food store.

For Mechanical Refrigeration Only



C. L. PERCIVAL COMPANY
DES MOINES IOWA
51 YEARS OF SERVICE 1886-1937



DESIRABLE TERRITORIES still available. Write for details of attractive, profit-making franchise.

NEW

HUMIDITY AND TEMPERATURE IN PERFECT BALANCE

THE PRICE LEADER OF A BIG LINE.

DISTRIBUTORS WILL BE INTERESTED

WRITE KOCH REFRIGERATORS TODAY

EXPORT DEPT. 304 E. 45TH ST. N. Y. CITY

KOCH ECON-O-CASE

WELDED ALL-STEEL CONSTRUCTION

CORKBOARD INSULATION

TRIPLE GLAZING

MAJOR APPLIANCES

Maryland G-E Dealer's Range Sales in 1936 Outnumber Refrigerators, 149 to 125

HYATTSVILLE, Md. — Electric range sales during 1936 by Maryland Electric Appliance Co., General Electric dealership here, outnumbered electric refrigerator sales, 149 units to 125—and with a record of more than 100 range sales so far this year, Owner Edward W. Kibbey believes his company is well on the way to duplicating that record.

Free trial periods on ranges, frequent cooking schools, and range sales contests among the store's salesmen are three of the principal reasons back of Maryland Electric Appliance Co.'s good range record, Mr. Kibbey says.

NO TRIALS RETURNED

Only dealer in the territory to offer the 30-day trial on ranges, Dealer Kibbey has never had to take back a range so installed during the five years that he has been selling G-E appliances.

Served by the Potomac Electric Power Co., Hyattsville is a town of 7,000 homes, located seven miles from Washington, D. C. The utility pays for the installation of an electric range except for the \$15 charge for the range circuit, which is added to the list price of the range.

Another ace in Mr. Kibbey's selling hand is the 1½-cent-per-kwh. electric current rate in Hyattsville, where gas rates are higher than in Washington, D. C.

COOKING SCHOOLS

Monthly cooking schools, conducted by Miss Carolyn Chesser of the Electric Institute of Washington, step up range sales during the fall and winter months. With an average attendance of 85 women, these schools have proved highly successful, according to Mr. Kibbey. As many as four electric range sales have been made immediately after a cooking school.

Programs climaxed by a drawing for \$100 worth of merchandise certificate prizes help put across the cooking schools. Prizes consist of five \$10 down payments on a G-E range or refrigerator, and five \$5 down payments on a radio or washing machine. Smaller appliances such as toasters, waffle irons, and clocks, are also given away at the schools, as is the food prepared.

RANGE CAMPAIGNS

The Maryland Electric Appliance Co. has been a leading contender in the two big range campaigns conducted by the Electric Institute of Washington each year. Held in the spring, the first contest each year is built around a \$15 allowance on old stoves. This fall's contest will offer a free trial in addition to the \$15 trade-in allowance.

Expansion of Mr. Kibbey's business during the past year has included opening a branch store in Mt. Rainier, Md., and adding five new salesmen. The new branch and the central store have display rooms finished in black and white with marble linoleum and chrome lighting fixtures.

With 100 range sales already made, and with the new branch and additional salesmen, Dealer Kibbey is looking forward to 200 range sales this year. Salesmen's contests, with

attractive prizes, are included in his fall promotional plans.

SALESMAN'S RECORD

Top salesman on the Maryland Electric Appliance Co. crew is J. C. A. Cameron, who sold 75 electric ranges in 1936, and has sold 43 so far this year.

Mr. Kibbey became retail refrigerator salesman for National Electric Supply Co. in Washington in 1928. During the four years that he was with the company, he won a place in the G-E Toppers club each year. He was promoted to branch manager of the Hyattsville store, and a year later bought out the branch and named it the Maryland Electric Appliance Co.

Personal contact and daily canvassing, backed up by direct-mail as a door opener, are used to get new prospect names for this firm.

'White Line' of Laundry Equipment Shown To 250 Westinghouse Distributors

MANSFIELD—Termed the "White Fleet," the Westinghouse 1938 laundry equipment line and the advertising and sales program to back it were introduced here recently at a meeting attended by 250 distributors and field representatives.

Five electric washers, four ironers, and three gas washers, in all-white finish, comprise the new line.

L. L. Shawber, manager of Westinghouse laundry equipment division, who staged the product show, also revealed plans for a national promotion of "Proving Laundries," similar to the company's "Proving Kitchen" program on its 1937 refrigerators.

These proving laundries will be located at strategic points throughout the country, Mr. Shawber stated, and the national and local advertising and publicity will be directed toward this activity.

The completely planned laundry will also be one of the outstanding promotions of the Westinghouse 1938 program, he stated. Display units for dealer stores, and the planned unit for prospects will be featured.

Heading the "White Fleet" products is a new streamlined spinner-dryer washer, which washes, blues, rinses, and damp-dries clothes. Two operations, washing and drying, can be performed simultaneously in it.

The model has no exposed moving parts. Full control of operations is exercised by two levers. The spinner-basket is a one-piece porcelain enamel cone with widened top, and with the lid attached so that it cannot be lifted while the spinner is operating.

The new Westinghouse turbulator, supported and balanced on a bronze splined drive, is of Lynite with four upper wings and four lower wings. The model has adjustable legs, tipped with rubber casters.

Four wringer-type models are included in the line: the Deluxe model, with a capacity of 9 lbs. of clothes per load, the Master model, with an 8-lb. capacity, the Standard model, with 7-lb. capacity, and the Leader, a low price model with 6-lb. capacity.

New Washer Added To Crosley Line

CINCINNATI — A streamlined square-tub washer with sealed mechanism and removable invertible type agitator has been introduced by Crosley Radio Corp. The new model will be known as model H-717 of the Crosley Savamaid line.

The 23-gal. tube is finished inside and out with white porcelain enamel, and is rubber-cushioned to eliminate all strain. It has a deep splash rim and a rustproof galvanized steel lid with rubber protector edge ring.

A three-wing, cast-aluminum agitator delivers a 225° stroke 116 times per minute, and has an outside control lever.

Mechanism has a patented ball-bearing drive, with each moving shaft operating on an adjustable pivot. It is completely enclosed in a cast-iron gear case. It bears a service warranty which guarantees to reimburse the dealer if service becomes necessary. The washer is powered with a ¼-hp. motor.

Washer is equipped with a Lovell adjustable-pressure wringer with soft rubber, 12 x 2¼-inch rollers. This wringer also has a patented lever release and safety clutch which stops both rollers when pressure is released.

One-piece chassis design, triple-coat porcelain enamel finish, 2¼-inch rubber rolls, and the Westinghouse turbulator, are among the features of the washer models.

Smartly styled and compact, the deluxe Adjust-o-matic console ironer is the favorite in the Westinghouse ironer line-up. Featuring two speeds, the model has a temperature range of 250 to 450° F., controlled by two thermostats on a divided heating element.

Mechanism operating the shoe and roll is fully enclosed. The cabinet covering the ironer opens at the touch of a button, and when closed, provides an added working surface in kitchen or laundry.

Features found on three of the ironer models include extra size ironer roll, 26 inches long and 7 inches in diameter; and ¾-hp. motor.

Two models with exposed ironers, the Adjust-o-matic ironer, and the Leader model complete the Westinghouse laundry equipment line.

Laundry Strike Boosts Spokane Washer Sales

SPOKANE—The laundry workers' strike, which has forced the closing of most of the laundry plants in Spokane, has resulted in new high record sales of 1,250 washers here during August and September by appliance dealers, reports the Washington Water Power Co.

Sales of electric ironers and irons have kept pace with washer sales, dealers report. Some laundry equipment dealers report sales gains of 100% or more during the two months that the strike has been in effect.

Spokane housewives, deprived of laundry services and unable to find any substitute, have practically been forced to buy their own home equipment, it is reported. Electric washer sales in Washington and eastern Idaho in the first nine months of this year total 3,800 units.

PAR WATER COOLED HIGHSIDES

PAR water cooled highsides are made in ten popular models, 1/3 to 10 horse power motor size. Employing the most advanced engineering design for high capacity and long life.

Multiple cylinders of large capacity insure very low operating speeds. Sizes 1/3 to 1 horse power are two cylinder pumps. Sizes 1½ to 10 horsepower are V type four cylinder pumps.

All water cooled models are equipped with finned tube and shell condensers, having a radiation surface of 25 square feet to each horse power. Large finned surface reduces water consumption.

A finned tube super heat remover is used between compressor and condenser, which reduces the gas temperature before entering the condenser, greatly increasing efficiency.

The water valves are rigidly mounted to the base, requiring minimum of piping. All units completely wired ready for installation. Motors equipped with cooling fans.

MODERN EQUIPMENT CORPORATION
DEFIANCE - OHIO - U.S.A.

SERVICE METHODS

Hair-Felt Padding in Machine Compartment Will End Noise from Revibration

BY K. M. NEWCUM

That familiar complaint — "The machine is noisy, we can hear it all through the house"—is one that haunts household refrigeration service engineers.

The condition is especially prevalent with older refrigerators. The compressor and motor may be in perfect shape mechanically, but the "running" noise seems to carry through the entire first floor and may in some cases be heard on the second floor of an average home.

The writer recently rented a house that has a built-in model L-5 Frigidaire with a louvered machine compartment door. It is about nine years old. It is mechanically perfect—has no knocks and the motor runs smoothly. Yet the "running" noise was very disturbing. The refrigerator is located near the back door. When the door was opened the noise seemed to die down.

The condition appeared to be a case of revibration. All the noise produced by the mere running of the condensing unit was being revibrated by the metal surfaces of the machine compartment to the tiled kitchen, thence to other rooms in the house.

Not having any special sound deadening (acoustic) material, I covered the back wall, sides, top, and bottom of the machine compartment with hair-felt rug padding. The machine compartment door was not covered. The results were very gratifying. The running noise was almost completely deadened and now the nine-year-old refrigerator sounds like a 1938 model.

Sound deadening material such as silencing felt is very inexpensive and easy to install. Service engineers might find a new source of revenue in the application of acoustic material in older household refrigerator cabinets.

Detroit Lubricator Offers Replacement Valve On 677 Model & Gives Installation Instruction

DETROIT — Refrigeration supply jobbers are now stocking the Detroit No. 677 thermostatic expansion valve which has been manufactured for the past three years for applications in which units of not greater than 1/4-hp. capacity were used, according to an announcement just made by I. J. Knudson, general manager of the refrigeration and air-conditioning division.

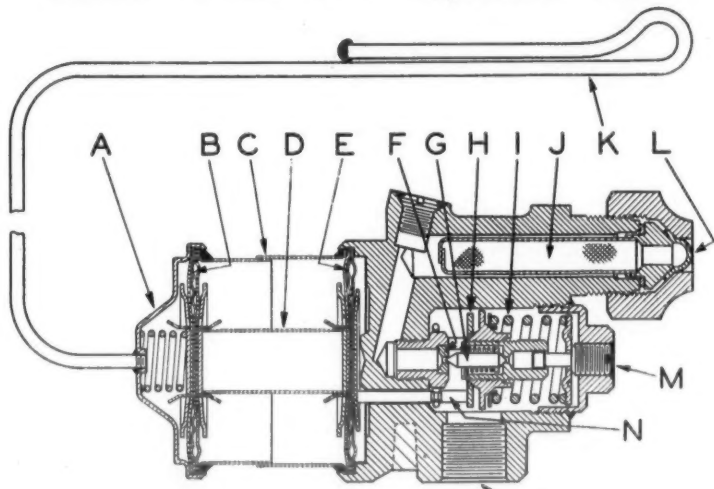
The model 677 valve will be stocked for replacement purposes only at present, according to Mr. Knudson, because it is non-adjustable and will perform satisfactorily only after both correct superheat setting and maximum operating pressure have been

upon the temperature at the feeler bulb "K."

The valve is thus controlled by both the pressure in the evaporator, and the temperature of the feeler bulb. Since the evaporator pressure depends upon its temperature, the valve really is controlled by the difference in temperature or the "superheat." When the feeler bulb is clamped to the suction line adjacent to the evaporator the valve controls the flow of refrigerant so that the entire evaporator will be refrigerated.

The valve is supplied with a 1/32 inch orifice. The inlet connection has a flared nut for 1/4-inch o.d. tubing,

Detroit Model 677 Expansion Valve



A—Power Element
B—Power Element Diaphragm
C—Stainless Steel Extension
D—Stainless Steel Push Rod
E—Body Diaphragm
F—Seat
G—Needle
H—Equalizer Disc

I—Adjusting Spring
J—Strainer
K—Feeler Bulb
L—Inlet Connection
M—Factory Adjustment
N—Push Pins
O—Outlet Connection

determined; thus it obviously cannot be used for general applications.

The valve was designed for small capacity, factory-engineered units, and is used on household refrigerators, beverage coolers, and water coolers.

Operation of the No. 677 is on the same principle as the other Detroit valves. However, instead of using two bellows as with other Detroit valves, the No. 677 uses two diaphragms.

The body diaphragm responds to low side pressure and opens the valve when that pressure is reduced, similar to the operation of an automatic expansion valve.

Power element diaphragm presses against the push rod "D" (see illustration) so that any increase in pressure in the power element will open the valve when that pressure is greater than the low side pressure.

Power element is charged with refrigerant, and, therefore, the pressure on the diaphragm depends

the outlet connection, a 1/4-inch female i.p.s.

The feeler bulb is an 18 inch length of capillary tubing bent back as shown at "K." A special clamp for 3/8 inch o. d. tube can be furnished when desired, Detroit Lubricator officials state.

It is recommended that the valve be located near the top or along the side of the evaporator. It may be placed in any position although generally it is best not to locate the power element at the bottom, the Detroit Lubricator engineering staff recommends.

The power element should never become colder than the feeler bulb, and insulation should not be placed around the power element.

The feeler bulb should be clamped to the suction line near the evaporator. On certain types of household refrigeration system evaporators it is sometimes desirable to clamp the bulb directly to the evaporator shell near the suction line.

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

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IN CANADA, UNIVERSAL COOLER CO. OF CANADA, LTD., BRANTFORD, ONTARIO • BLOOMINGTON, ILLINOIS, U. S. A.

Model 240 BEVERAGE COOLER

Floating Ice

PELCO makes its own FLOATING ICE automatically, as needed.

INSTALLATION METHODS

Operating & Installation Factors Of Direct Expansion Water Cooling Systems

BY F. O. JORDAN

WATER cooling systems find many applications in the industrial and processing fields, both in straight refrigerating applications and in air-conditioning work. The technique of cooling water for refrigerating purposes is one which involves some special factors.

The cooling capacity of the water cooler per unit of cooling surface depends upon the mean effective temperature difference between water and refrigerant, upon water and refrigerant velocities, and upon the arrangement and type of surfaces used. Since the temperature of the water within the cooler is fixed by certain factors as described above, the mean effective temperature differ-

ence between water and refrigerant must be fixed as the desired figure by proper selection of the refrigerant temperature, the mean difference being increased by lowering the refrigerant temperature.

Obviously, lowering the refrigerant temperature increases the cooler capacity, but means a reduction in refrigerant pressure. Unfortunately, the efficiency and capacity of the refrigerant unit are reduced by reduction in refrigerant suction pressure, so that lowering the refrigerant temperature within the water cooler impairs refrigerating unit performance. Generally, the best overall economy cooler is obtained at 35° to 40° refrigerant tempera-

ture. Temperatures below 30° should not be used because of danger of ice formation.

The purpose of the water cooler is to cool water by boiling or evaporating refrigerant in close proximity to it. The temperature of the water is reduced because the heat required to boil the liquid refrigerant, or to furnish the latent heat of vaporization necessary to change the refrigerant from its liquid to its gaseous state, is absorbed from the water.

In order to induce heat to flow from the water into the refrigerant, a refrigerant pressure must be maintained whose saturation temperature or boiling temperature is lower than the delivery temperature desired for the water. Obviously, this temperature differential must be great enough to induce a rate of heat flow that will result in cooling the water at suitable rapidity.

If the differential between average water temperature and the refrigerant temperature is too small an excessive amount of water cooling surface will be required.

On the other hand, if the differential between the average water temperature and the refrigerant temperature is excessive, either the water delivery temperature will be too high to enable the evaporator to do its work properly or very low refrigerant temperatures will be necessary, which will result in penalizing the refrigeration unit as described above.

BALANCED PERFORMANCE

In order to arrive at the most efficient design, the performance of the water cooler must be balanced against the performance of the refrigerating unit in such a way that the total overall performance of both units is at its best, that the total cost of both units is at its lowest, and that water is supplied at suitable temperatures and quantities for the particular air-conditioning project with which the equipment is to be used.

In other words, refrigerant temperature and pressure must be employed which are low enough to cool water to the required temperature without necessitating an excessive amount of water cooling surface, but which does not result in undue penalties upon refrigerating unit efficiency and capacity.

These requirements demand that the exchange of heat between water and refrigerant be facilitated in every possible way, in order to reduce to a minimum the required temperature differential between average water and refrigerant.

To accomplish this purpose the fullest advantage must be taken of Nature's fundamental laws by separating water from refrigerant only by thin walls constructed of materials whose resistance to heat flow is very low, by utilizing ample water and refrigerant velocities, and by making use of designs which do not permit the refrigerant side of transfer surfaces from becoming clogged or coated with oil deposits resulting from excessive separation from the refrigerant.

Ample water and refrigerant velocities are necessary because coefficients of heat transfer either from or to the heat transfer surface are higher at greater velocities of the water or refrigerant which is in contact with the surface. Good results in this respect demand refrigerant velocities in excess of 1,000 f.p.m. and water velocities of 250 f.p.m. or greater.

PREVENT SEPARATION

Another important reason for maintaining the rate of refrigerant flow at 1,000 f.p.m. or greater: to prevent deposits of oil from separating from the refrigerant gas and

Water Cooling—It Requires Special Knowledge

Refrigeration applications in which a direct expansion system is used to chill water which in turn does the actual refrigerating work are not commonplace; however, when such a job comes up, it is usually a big one, and it is the kind of an application where the installer must know absolutely what he's doing.

This article describes the operation of various kinds of water coolers, the factors that will determine whether or not the operation is efficient and economical, and some of the control equipment involved.

forming excessive deposits, coatings of oil upon the heat transfer surfaces. These requirements for refrigerant and water velocities determine the cross-sectional area of the refrigerant and water passages.

The length of the passageways for the water and for the refrigerant is limited by the allowable water and refrigerant pressure drops, as determined per linear foot of passageway by its character and by the above water velocities.

The coefficient of heat transfer at a given velocity may be increased by rolling spiral grooves or ridges into tubing or by the insertion into the tube of a "turbulator," consisting of a twisted metallic ribbon, or rod. While such features increase rates of heat transfer at given velocities, they result also in raising resistances to water flow by about the same percentage, so that the rises both in heat transfer and in resistance to water flow may be duplicated by utilizing higher velocities with smooth, hence less costly, tubing.

FIG. 1 EXPLAINED

In Fig. 1 is shown a water cooler in which water is circulated through a shell containing a direct expansion water cooling coil in which refrigerant is boiled. With this design a good refrigerant velocity may be obtained so that no oil deposits will form, while the heat transfer between inside surface of coil and the refrigerant will be high.

However, the rate of heat transfer from water to outside surface of coil will be low because water velocity approaches zero. In Fig. 2 the latter fault is corrected by baffles arranged to produce a good water velocity.

EXTENDED SURFACE FIN

Another method by which the situation in Fig. 1 may be improved is to make use of an extended surface type of fin so that the surface of contact between water and tube is greatly increased. For ideal results, sufficient fin surface should be installed so that the rate of total heat transfer (between the water at low velocity and the increased exterior tube surface) is equal to the maximum possible rate of heat flow between the much smaller inside surface of the tube, and the refrigerant.

By joining the baffles, shown in Fig. 2, to the direct expansion tubes, the double effect of some secondary exterior surface and higher water velocity may be obtained.

Another type of cooler in which good refrigerant and water velocities are realized, is a design in which a tube is inserted within a tube to form a "double pipe" cooler, in contrast to the "shell-and-tube" coolers described above. In this cooler, the refrigerant may be boiled within the inner tube, and the water may be between the tubes. In certain designs, the double tube is rolled to form a coil which is inserted into a shell which forms a storage space.

With this arrangement, the refrigerant may be boiled in the circular space between the tubes so that it cools the water flowing through the inner tube, and the water in the storage space as well, which may be baffled as in Fig. 2, if desired.

SHELL-AND-TUBE COOLER

In the shell-and-tube cooler shown by Fig. 3, the water circulates through the tubes so that good water velocity is obtained, but obviously there is very little gas velocity so that oil will be trapped badly, and the rate of heat transfer between water and tube exterior will be poor.

With certain refrigerants, the situation may be remedied by spraying the liquid refrigerant over the coil surfaces by means of a circulating pump; but if the method is used there is yet that very serious difficulty of inducing the oil to make its own exit from the cooler shell as rapidly as it enters.

All of the above water coolers must be provided with automatic controls which regulate the refrigerating effect to maintain the desired water temperature. Such control generally consists of a liquid immersion-type thermostat inserted into the shell and arranged to shut off the supply of liquid refrigerant upon falling water temperatures.

FURTHER CONTROL POSSIBLE

Further control may be obtained by installing a suction pressure regulating valve in the refrigerant suction line from the cooler which will prevent the suction pressure from falling below a level at which the saturation refrigerant temperature would result in an excessive rate of cooling, or in freezing of water within the cooler.

An additional safety device must be provided for shutting off the refrigerating effect before freeze-ups can occur due to failure of controls.

In a water cooler in which ice is (Concluded on Page 23, Column 1)

THE BUYER'S GUIDE

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Exceptional design. Made of brass. Negligible pressure drop. Easily removable screen. Very large screen area. Light weight. Trapping of oil can be entirely prevented by installing strainer on its side or in a vertical position. Write for Catalog 62: Dryers, Strainers, Valves and Service Tools.

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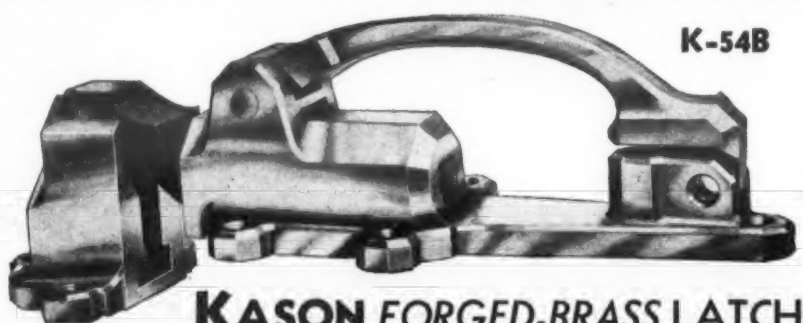
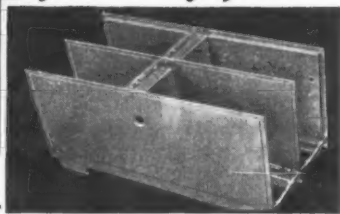
CORDLEY Electric WATER COOLERS

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Modernize old equipment... provide much greater storage space for packaged goods... eliminate brine leaks and attendant odors... reduce weight and simplify installation... require a minimum of service... provide ideal temperatures under all conditions... cost less to operate... quickly and easily installed in any standard cabinet at small cost.

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Massive sealing power and rugged service-worthiness are two outstanding features of this world-famous latch. Its Forged-Brass construction is the hardest metal construction known to the industry and an assurance of faultless, faithful service throughout its long life.

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Shell and Tube Water Cooler

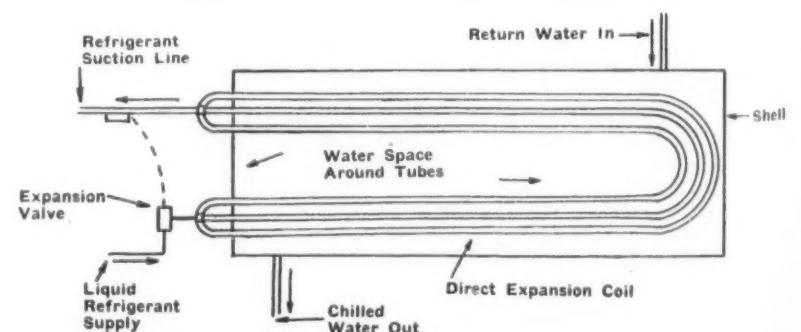


Fig. 1—Using direct expansion coil to cool the water within the shell.

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LINES OF COMMERCIAL HARDWARE FOR EVERY APPLICATION



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GRAND RAPIDS, MICHIGAN

Shell and Tube Water Cooler with Baffles

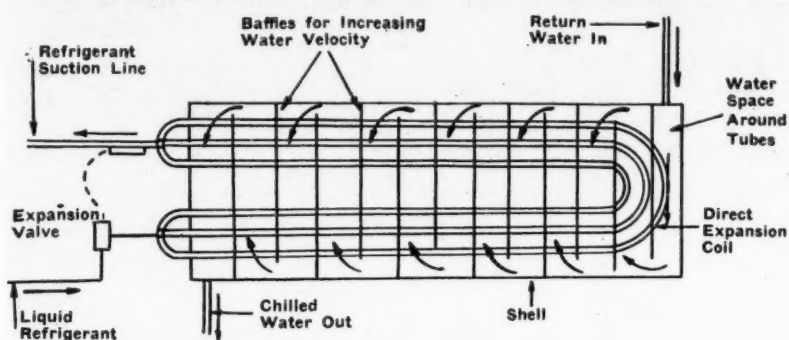


Fig. 2—Baffles increase water velocity. Results in more rapid cooling.

Shell and Tube Water Cooler

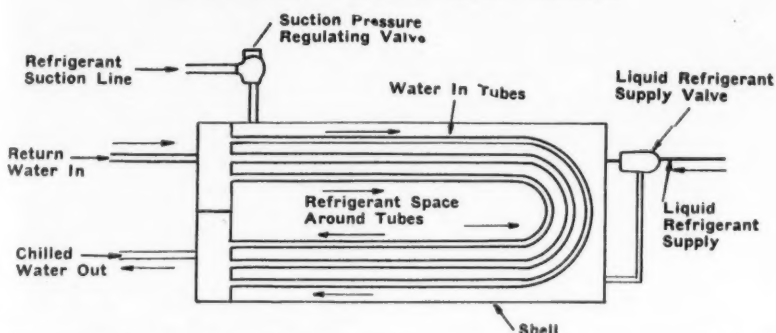


Fig. 3—The water is circulated through the tubes. Refrigerant in the shell surrounds the water coils.

Plant for \$50,000 Home Is Arranged to Cool Rooms Individually

TULSA, Okla. — Natkin & Co., Westinghouse air-conditioning dealer, has been awarded the contract for the complete year-around air conditioning of the new home being built at 27th & Forest Blvd. for Louis P. Myers, reports Bert Natkin, manager of the Natkin & Co. local branch.

This home will cost in the neighborhood of \$50,000 and is a Neoclassic design located high on a hill with acres of ground surrounding it. The house consists of three complete floors.

In the basement is located a game room, recreation room, bar and tavern room, hall, furnace and equipment room, as well as laundry. On the first floor is the entrance hall, living room, dining room, morning room, kitchen, powder room, etc. On the second floor are several bed rooms as well as servants quarters.

Even though the attic space will have 4 inches of rock wool insulation and all side walls will be insulated the total cooling load was estimated at approximately 11 tons of refrigeration, while a furnace having an output capacity of 300,000 B.t.u. is required.

"For the heating of the house we are installing one 9-section Mueller, enamel finish, gas era furnace, completely automatic in every respect," explained Manager Natkin. "At the intake of the furnace we are installing a Fedders conditioning unit complete with blower, motor, cooling coils, humidifier sprays, and filters; and an outside air supply to the conditioner of ample capacity so that in fall and spring 100% outside air may be taken into the house."

"Individual supply and returns are provided in every room, the supplies being located approximately 7½ feet above the floor while returns are at the floor."

"Due to the fact that in the home, the entire house is not occupied at one time it is totally unnecessary to air condition the entire house at one time. Therefore, it was decided to zone the house so that a 7½-hp. Westinghouse hermetically sealed unit, having the capacity of 7.4 tons of refrigeration would be sufficient."

"In determining the zoning of the house, the conventional method of making one zone of the first floor and another zone of the second floor was not satisfactory for the needs of the owner."

"It was found that during the greater part of the daytime he desired the conditioning of one of the recreation rooms in the basement, the living room, dining room, and the morning room on the first floor, and at least one bedroom on the second floor, although other combinations might be required at times. The night zone probably would be the bedrooms."

"Our plant makes it altogether possible for us to condition three-quarters of the house at any one time; therefore, it was finally decided to make it possible for the owner to cool any individual room as he so desired and to be able shut off any rooms that he does not feel is necessary to cool."

"To do this we are installing McKnight registers in all supplies, with a dial control on the wall approximately 4 feet from the floor directly below each grille so that the owner may throttle the amount of air in any one room and at the same time be able to shut any one room off entirely. To make possible the shut-

ting off of any one room, we are also installing register type returns so the return may also be shut off in rooms not to be cooled.

"These rooms are entirely isolated from the system, therefore the owner may now condition any combination of rooms up to three-fourths of the area of the house."

"The next problem which was encountered was the means of conserving the condenser water. Due to the fact that water in the residential district in Tulsa is sold at a very low rate during the summer months, an evaporative condenser would not prove to be an economical solution for the problem, but due to the fact that the owner is installing a very elaborate underground watering system for the large lawn we are connecting up the outlet of our condensing water to this system by means of a three-way valve, so that at the owner's discretion he may run all condenser water through the lawn sprays or may by-pass it directly to the sewer."

"All rooms in the basement and first floor are supplied by ducts that are run along the ceiling of the basement, all of which are furred with metal lath and plaster. For the supply of air to the second floor, one main riser is carried into the attic space and distributed from that point; these ducts running through the attic space being well insulated."

Bank Installs Cooling On 50th Anniversary

PRATT, Kan.—A Servel air-conditioning system has been installed in the Peoples bank here G. B. Govits & Co., Servel distributor in the Wichita, Kan., territory. The system was placed in operation on the bank's fiftieth anniversary.

Servel equipment installed in the bank included a Model WAO-500 air-conditioning unit. Air distribution is obtained through a duct system connected to the conditioning unit in the basement of the building. Grilles distribute the conditioned air to every section of the banking quarters. These grilles were designed to harmonize with the decorative plan of the building's interior.

Carrier Booklet Features Air Conditioning

NEWARK—Carrier Corp. has released a 12-page illustrated booklet describing its industrial air-conditioning, refrigerating, and space heating equipment, ranging in size from the Weathermaker one-room conditioner to a self-contained centrifugal refrigerating machine for use in large scale industrial process work and commercial conditioning installations.

Reasons for Storing Up Ice in Water Cooling Systems

(Concluded from Page 22, Column 5) frozen deliberately, the purpose of freezing ice is to store refrigeration. If we wish to store refrigeration merely by storing water, we can store but 10 B.t.u. per pound of water if we cool it 10° below the temperature level at which refrigeration is desired. But if we store refrigeration by freezing ice, we store 144 B.t.u. per pound of ice, plus a B.t.u. per pound for every degree between 32° and the temperature level at which refrigeration is desired.

The advantage of storing refrigeration for air-conditioning service is that on the project of a short but high peak load, a much smaller refrigerating unit may be employed if sufficient refrigerating effect is stored during light or no-load periods.

For example, consider an air-conditioning job upon which the load is 10 tons of refrigerating effect, but lasts only two hours per day. If no refrigerating effect were stored, a refrigerating unit of 10 tons of refrigerating effect would be required.

However, a one-ton refrigerating unit operating in excess of 20 hours per day can lay up enough refrigerating effect to carry the load over the period when air conditioning is required. Obviously the difference in cost between a 10-ton and a one-ton refrigerating unit will pay for a lot of storage equipment.

The chief disadvantage of the ice freezing method of refrigeration storage is that the refrigeration unit must operate at a lower temperature (hence a lower suction pressure) than is generally used in air-conditioning or general processing work in order to freeze ice.

Fig. 4 shows the water cooler which is arranged for storage of refrigeration effect by freezing of ice. In this cooler, a temperature controller is provided whose sensitive element is installed within the shell about 2 inches from the surface of the shell. The refrigeration unit operates at a suction pressure whose

Ice Freezing Water Cooler

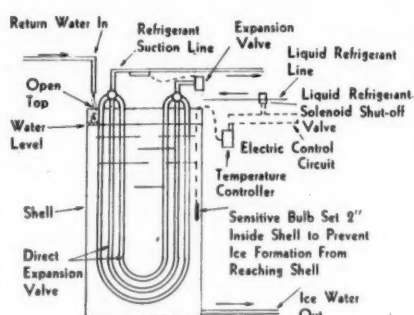


Fig. 4—This arrangement allows for freezing ice on expansion coil, for storage of refrigeration capacity.

saturation temperature is cold enough to result in the desired rate of ice freezing. When the ice mass builds out to the bulb, the increased rate of heat flow, from the bulb to the direct expansion coil via the ice, chills the bulb and so actuates the controller to shut off the supply of liquid refrigerant. Here there will be no danger of bursting the cooler shell.

Good air-conditioning unit performance generally demands water temperatures in the neighborhood of 40° or 45°. As the rate of water flow through the air-conditioning coil is increased, pumping costs of the circulated water also increase, while air-conditioning coil capacities rise as conductivities are improved and because the average temperature of the water within the coil is lowered.

Conversely, a reduction in water rate lowers pumping costs, but penalizes air-conditioning coil performance.

Obviously a water rate must exist which results in the highest overall economy as to coil and pumping costs. Generally, this rate is about 3 or 4 g.p.m. per ton of refrigerating capacity, which may be computed to mean 8° or 6° water temperature rise, respectively. This temperature rise, plus the temperature rise of the water as it is circulated through the piping, indicates that the water as it enters the cooler generally is between 50° and 55°.

THE BUYER'S GUIDE

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1937 Catalog of Air Conditioning and Refrigeration Parts and Supplies... **SEND FOR IT NOW!**

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TOOLS SUPPLIES EQUIPMENT FOR DOMESTIC COMMERCIAL AIR CONDITIONING
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Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

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—Just a Few of the OUTSTANDING FEATURES of

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Type KO COMMERCIAL CONTROLS
RANCO, Inc. Columbus, Ohio

Dayton Will Require Master Plumber to Install Air Cooling

(Concluded from Page 1, Column 2) installations made in old buildings where water facilities are considered inadequate to handle the extra demand placed upon them by the air-conditioning units.

"Without adequate water facilities," he declared, "the discharge from the larger units into the soil pipe vent stack would cause all of the plumbing fixtures on the stack to syphon the water out of the bowls and allow sewer gas to enter the building through the sanitary plumbing system."

"A very severe gas explosion could occur in a building in which such a condition exists. It is mainly with an eye toward preventing such calamities that we are watching closely all major air-conditioning installations."

"We have found that many buildings, particularly older ones, lack adequate water supply to handle an air-conditioning unit which requires water. Therefore, before any installations are made in such buildings, we require that a master plumber inspect the building to determine the adequacy of its water service."

Mr. Murray indicated that no difficulty had been experienced in enforcing the new regulation. Builders and contractors, he said, had been informed of the ruling. Consequently, when they are ready for the installation, they call in their own licensed master plumber who obtains the city plumbing permit and proceeds with the installation.

Wimberly Heads Texas Kelvinator District

DALLAS, Tex.—Appointment of J. H. Wimberly, Jr., as Texas district manager for the Kelvinator division of Nash-Kelvinator Corp. has been announced by J. T. Dalton, south central regional manager.

Mr. Wimberly succeeds H. L. Schmutz, who has been transferred to the Kansas City territory. He has been with Kelvinator for three years, being promoted to his present position from that of regional merchandise manager.

New Orleans G-E Dealer Moves Headquarters

NEW ORLEANS, La.—Southern Refrigeration Sales, Inc., dealer for General Electric commercial refrigeration, dairy equipment, and beverage and water coolers, has moved its offices and service department to 4014 Canal St.

AT NO EXTRA COST...

these engineering features for display cabinet doors

THE new Ace "Loxit" hard rubber assembly units have deservedly won the enthusiastic endorsement of manufacturers as well as dealers—because of their notable engineering improvements. Complete "Loxit" units—doors... rails... jams—at no increase in cost—include these up-to-the-minute structural features:

1. Locked-in, lift-out doors
2. Tightly closed overlap
3. Reduced air leakage
4. Roller bearings
5. Quiet closure
6. Lighter weight
7. Greater strength
8. Shock absorbing jams

Available in a wide range of sizes—for regular Display Cabinet types. Storage and service doors, glazing strips, trim, etc. Manufacturers: Write for complete details and prices to

AMERICAN HARD RUBBER CO.
11 Mercer St., New York, N.Y.—Akron, O.
111 West Washington St., Chicago, Ill.

ACE "LOXIT" PATENTED DOORS

Range & Space Heater



This model in the new Copeland range line combines a cooking range with a kitchen heater. Note the flue at the left.

Copeland Adds Ranges To Appliance Line

(Concluded from Page 1, Column 1) full-size cooking top and oven and a large capacity kitchen heater. The heater is designed to take cold air from the floor and circulate it throughout the room. A hot water heating attachment also is available.

Another large capacity electric range is the "Whitehouse" model C-502, equipped with Chromalox units, double oven for broiling and pastry baking, a utility compartment with two utility drawers, and standard features such as timing controls, oven regulator, top light, and "minute-minder."

Model C-501, the "Whitehall," is a full size range with utility compartment or warming oven, two large storage drawers, four surface cooking units, temperature control oven switch, and convenience outlets, all mounted on modern styled cabinet base.

The "Whitestone," model C-503, is a three-burner single cabinet model designed to occupy a minimum amount of floor space. Each unit is controlled with a modern type three-heat switch. Oven units are made to serve for broiling as well as baking, and the range also has oven temperature control and safety slide racks.

Model C-500, the "Whitewood," is a streamlined short-leg cabinet type range of all-steel construction, with spacious oven and utility compartment and roomy cooking top. It has many of the features of the "Whitehouse" model. Smallest range in the Copeland line, the "Whitewood" will be priced for volume business.

Kitchen heater, the "Whitecole," model C-505, is designed to burn either coal, coke, or wood, and is constructed for efficiency in heating one or two adjoining rooms in addition to the kitchen. It can be obtained either with a large cooking top or with a decorative grill.

The portable electric cooker, offered in addition to the range line, is designed to supplement the range in the preparation of food, leaving the full burner capacity of the stove intact. It may also be used in preparing smaller meals without necessity of using the range. The cooker is fully automatic.

EH & FA Closes Contracts With Distributor Groups

WASHINGTON, D. C.—Electric Home and Farm Authority has closed contracts providing for cooperation in financing the sale of electrical appliances with five electrical distributing associations. They are:

Joe Wheeler Electric Membership Corp., Hartselle, Ala.; The Carroll Rural Electric Association, Carrollton, Ga.; The Colquitt County Rural Electric Co., Moultrie, Ga.; Board of Water, Electric, Gas, Power Commissioners, Austin, Minn.; Head-of-the-Lakes Cooperative Electric Association, Superior, Wis.

Nash-Kelvinator Declares 25-Cent Dividend

DETROIT—A dividend of 25 cents per share payable on Nov. 20, 1937, to stockholders of record at the close of business Oct. 30, 1937, was declared at a recent meeting of the board of directors of Nash-Kelvinator Corp. held in Chicago.

Display Coach Used By S-W Distributors

CHICAGO—Stewart-Warner Corp. has added its name to the rapidly growing list of major appliance manufacturers who have resorted to auto-trailer display coaches to carry their product story to the smaller, more isolated dealers who find it impossible to visit their distributor's show-rooms.

Distributors have found the new 17-ft. Stewart-Warner display coach, loaded with S-W refrigerators and radios, a valuable aid in acquiring new dealers as well as in maintaining contact with old ones, they have told factory officials.

When the distributor's salesman in charge of the coach succeeds in signing up a new dealer, he spends two or three days in contacting that dealer's prospective customers, bringing the actual merchandise to the customers' doors with his display coach.

Old dealers have found that a visit from the display coach gives them a certain prestige in their territory.

One story is told of a visit made by the display coach to a small Indiana dealer who had been hesitant about taking on the S-W line. When the coach stopped in front of this dealer's store, a curious crowd gathered around it. In this crowd was the owner of a restaurant located next door to the dealership. When this restaurant owner pulled out a roll of bills and purchased—for cash—one of the refrigerators in the coach, the dealer was so impressed that he offered no further resistance.

ROBERTS TUBE WORKS

2502 MILITARY AVENUE, DETROIT, MICHIGAN

NOW PRODUCING COPPER TUBING FOR REFRIGERATION & AIR CONDITIONING

SEND US YOUR
INQUIRIES
OR
SPECIFICATIONS

- ★ BRIGHT DRY ANNEALED
- ★ UNIFORM TEMPER
- ★ CLEAN INSIDE AND OUT
- ★ ENDS DOUBLE SEALED

Incorporated 1910

Anaconda Copper

REFRIGERATION TUBES
They Flare without cracking

THE AMERICAN BRASS CO.
FRENCH SMALL TUBE Branch
General Offices: Waterbury, Conn.



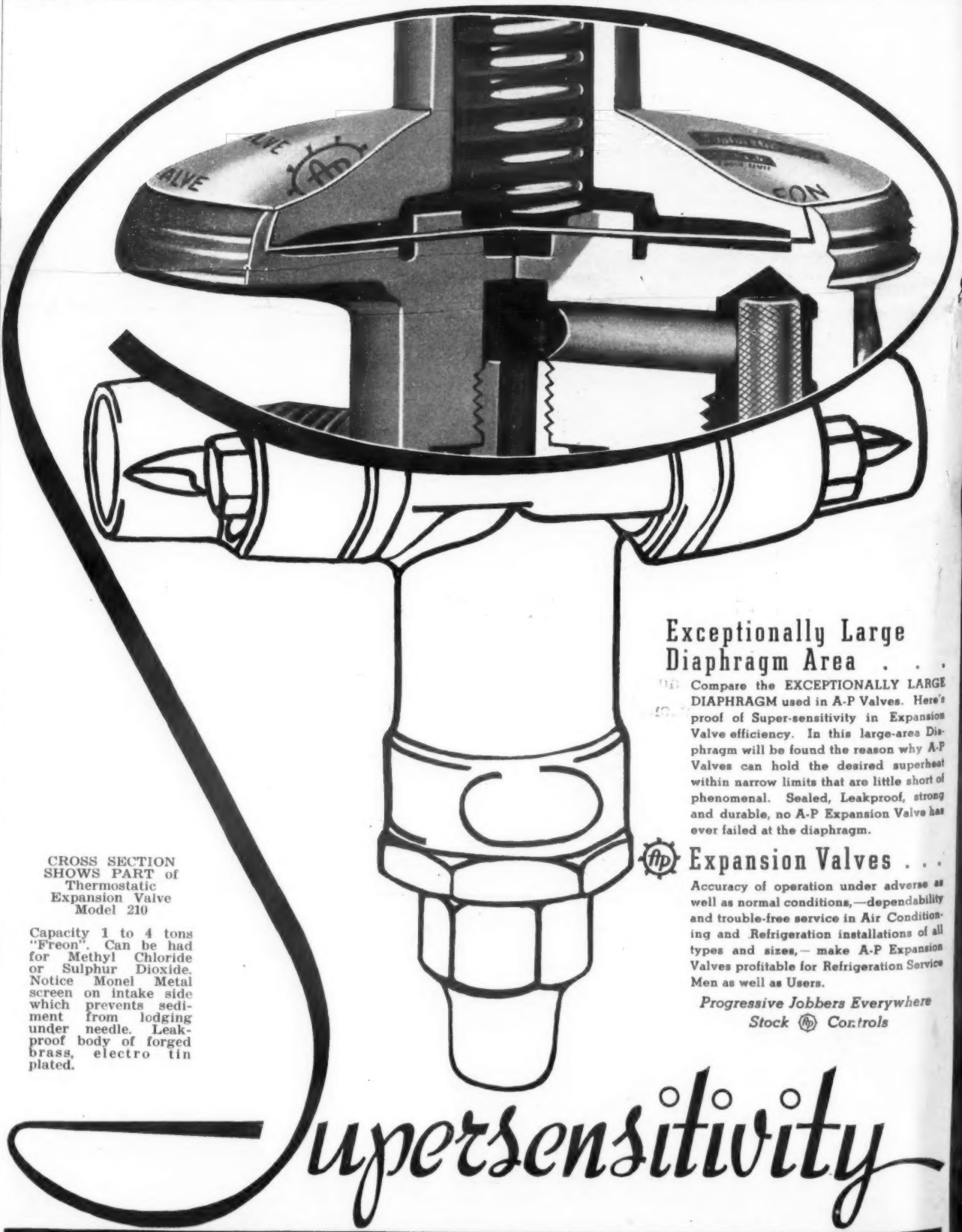
New York Dealers Debate Merits of Two 'Blue Book' Plans on Radio Trades

(Concluded from Page 1, Column 2) of a figure on each radio set, similar to the plan now being followed in automobile trade-ins. Advocates of this plan point out that its greatest advantage is that it is "automatic," as far as the dealer is concerned, while the first method would require the dealer to figure the depreciation allowances, plus ascertaining the manufacturer's original price, before he could set the trade-in value.

In considering the two methods suggested, interested distributors and

dealers also are trying to avoid the legal entanglements which might follow the putting into effect of either one of them.

Electrical Appliance Dealers' Association of Brooklyn, Inc., has been one of the leaders in advocating the "blue book" plan of regulating trade-in allowances under the Feld-Crawford fair trade act. Crichton Clark, attorney, and William H. Ingersoll, pioneer fair trade legislation advocate, have been assisting the association in its work.



Exceptionally Large Diaphragm Area

Compare the EXCEPTIONALLY LARGE DIAPHRAGM used in A-P Valves. Here's proof of Super-sensitivity in Expansion Valve efficiency. In this large-area Diaphragm will be found the reason why A-P Valves can hold the desired superheat within narrow limits that are little short of phenomenal. Sealed, Leakproof, strong and durable, no A-P Expansion Valve has ever failed at the diaphragm.

Expansion Valves

Accuracy of operation under adverse as well as normal conditions,—dependability and trouble-free service in Air Conditioning and Refrigeration installations of all types and sizes,—make A-P Expansion Valves profitable for Refrigeration Service Men as well as Users.

Progressive Jobbers Everywhere
Stock Controls

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SUPPLEMENT TO OCT 22 1937

AIR CONDITIONING AND REFRIGERATION NEWS

Entered as second-class
Matter Aug. 1, 1927

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Patent Office as Electric Refrigeration News

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Business News Pub. Co.

VOL. 22, No. 8,
SERIAL No. 448

5229 CASS AVE., DETROIT, MICH.
OCTOBER 20, 1937

IN 2 PARTS, PART 2
20 CENTS PER COPY

First Copy

Commercial Refrigeration Buyers' Guide

THIS SUPPLEMENT TO THE NEWS contains a directory of manufacturers of *commercial* refrigeration equipment, and its major component parts and accessories, classified according to products. The complete address of each company will be found in the alphabetic index on pages 66 to 76. See page 4 for an index of advertisers who have used this medium to present their products and services for your consideration.

The Commercial Refrigeration Buyers' Guide is furnished in this convenient size and condensed arrangement to all readers of the NEWS in order to stimulate interest in the complete new 1938 Refrigeration and Air Conditioning DIRECTORY.

The 1938 Directory, the first complete revision since 1935, will contain listings of manufacturers of *all types* of household and commercial refrigeration and air-conditioning equipment, accessories, parts, materials, supplies, and tools. It will be available in three sections, each of which is designed to meet the needs of a particular vocational classification of the industry.

(Please Turn to the Next Page)

The Buyers' Guide Section (Directory No. D-1), which will be off the press soon, will contain the information needed by purchasing agents, production executives, distributors, dealers, service men, export agents, importers, and others seeking *sources of supply*.

The 1938 Refrigeration and Air Conditioning Directory No. D-1 will be offered at *a new low price of \$1.00 per copy* postpaid to any address in the United States. No buyer can afford to be without this valuable reference book. Several thousand dollars must be expended to compile and publish the information in this Directory, yet it will all be available to you at a price which you might easily spend (in postage and letter writing alone) just to get data on *one item* needed in your store, factory, or shop.

One dollar invested in the Directory is insurance against delays and loss of business. It will pay you to know *who makes what* and *where*. Don't overlook the *new suppliers of new products*. Don't waste time writing to defunct concerns and fly-by-nights. Get a Directory and keep it on your desk for reference.

NOTICE: Letters to manufacturers requesting catalogs, descriptive literature, and prices may be mailed in care of the Directory Service Department, Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich. Requests for information regarding any of the particular types of equipment listed in this Guide may be addressed to the NEWS in a **single** letter and copies of your inquiry will be forwarded promptly to all suppliers of the products specified.

In compiling the listings in this "Commercial Refrigeration Buyers' Guide" every effort has been made to include the names of all manufacturers who are prepared to furnish the products in the various classifications. No charge has been made for these listings and such listings are not a part of any advertising contract. The NEWS assumes no responsibility for any errors or omissions but will welcome corrections to be published in the new 1938 Directory (No. D-1) also suggestions for improving this service to the industry.

NOW *You Can* *Merchandise*

COMMERCIAL REFRIGERATION

● NOW, commercial refrigeration is a merchandising business—if it's Westinghouse Commercial Refrigeration. Westinghouse has made it so. How? As follows:

- (1) By developing a "hot" line of equipment—a complete line—much of it packaged, including both hermetically-sealed and open-type units, and all backed by the 5-year protection plan.
- (2) By simplifying estimating.
- (3) By simplifying engineering.
- (4) By specialty sales training methods.
- (5) By specialty prospecting and selling plans.
- (6) By simplifying installation.
- (7) By simplifying service.

A complete line, a powerful selling plan, simple engineering and service. These are the things that make Westinghouse Commercial Refrigeration a real profit-building merchandising opportunity for you. Better get the facts, NOW.

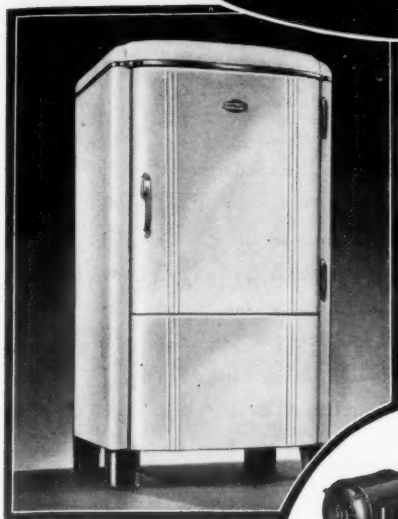
Westinghouse
ELECTRIC & MANUFACTURING CO.
Dept. 809, MANSFIELD, OHIO



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Dependable
ELECTRIC REFRIGERATION
At its Best!
COPELAND

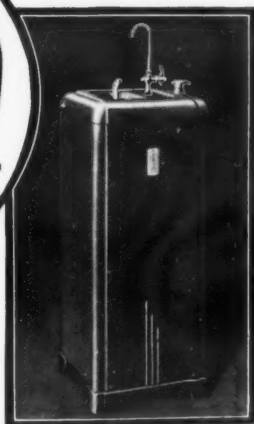


THERE are many thousands of Copeland electric household refrigerators and commercial installations which have been in service for years. These testify to the quality, performance and economy of this great time-tested line.



The modern Copeland refrigerating unit is built to precision-standards considered to be the highest prevailing in the industry today. Behind these remarkable products are large resources and manufacturing facilities which assure Copeland a position of continued leadership and progress.

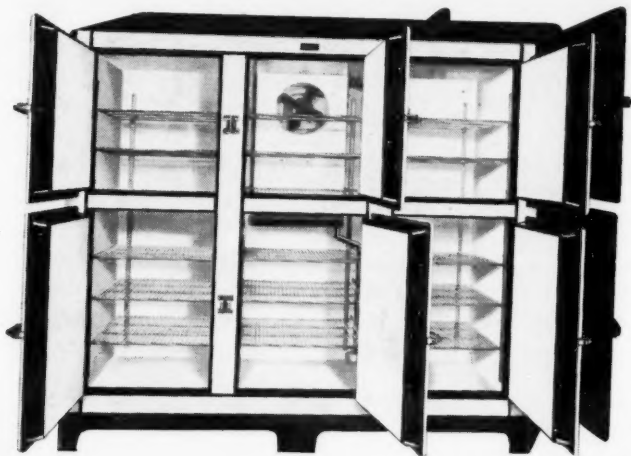
A complete line of Household and Commercial Refrigeration—Electric Ranges—Washers and Ironers



COPELAND REFRIGERATION CORPORATION
Holden Ave. at Lincoln • Detroit, Mich.

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Seeger AIR CONDITIONED COMMERCIAL CABINETS

The development of Seeger's New AC (Air Conditioned) Commercial Cabinets opens new and broader fields in commercial refrigeration. The three new models are the AC-32, AC-40 and AC-64. All have full porcelain linings with porcelain fronts and ends.

Seeger Air Conditioned Commercial Cabinets are equipped with units which automatically cool, wash, humidify and maintain a uniform temperature throughout the entire cabinet.

The new Seeger AC Cabinets are ideal installations for stores, hotels, restaurants, clubs and public and private institutions.

SEEGER REFRIGERATOR COMPANY

Saint Paul Minnesota

BRANCHES:

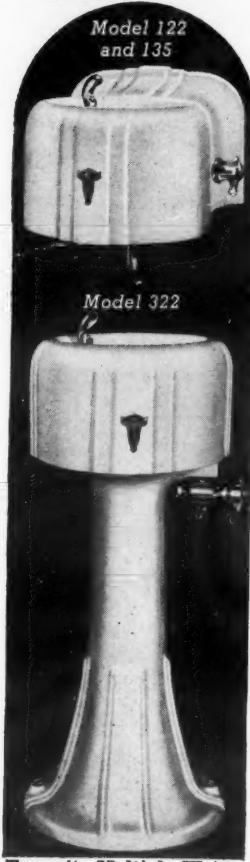
New York—Boston—Chicago
Los Angeles—San Francisco

SPECIAL REPRESENTATIVES:

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Seeger-Philadelphia, Inc., Philadelphia, Pa.



Temprite Beer Cooler—May be had to dispense 4 kinds of beer and 2 kinds of water.



Temprite Multiple Water Cooling System Fountains.

TEMPRITE

Instantaneous Coolers for Water, Beer and Other Liquids

Temprite coolers are instantaneous—and have revolutionized the cooling of drinking water as well as the dispensing of beer and other beverages.

In the Temprite Multiple System of Water Cooling, the water is cooled at the bubbler—not in the basement. The first ounce of water is cold,—cooled to any predetermined temperature, regardless of weather, load or inlet temperature. As there are no storage tanks or cold water lines with their resultant losses, a large percentage of the operating cost is saved.

The Temprite Beer Cooler dispenses beer at the correct temperature regardless of weather or load—assures the correct collar, and eliminates waste.

All Temprite Coolers are independently adjustable—at the operating point. They hold to exact temperature.

Write for Literature on Temprite Coolers

TEMPRITE PRODUCTS CORPORATION

Originators of
Instantaneous

DETROIT



Liquid Cooling
Devices

MICHIGAN

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Puffer-Hubbard Mfg. Co., Minneapolis
Russ Soda Fountain Co., Cleveland
Schaefer, Inc., Harold L., Minneapolis
Seeger Refrigerator Co., St. Paul
Sheldon-Stewart Co., Kalamazoo, Mich.
Stephens & Co., A. J., Kansas City
Weber Showcase & Fixture Co., Inc.
Los Angeles, Calif.

Beer Cooling Systems

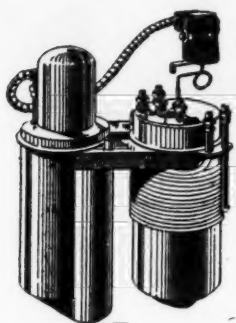
Commercial Coil & Refrigeration Co.
Chicago, Ill.
Temprite Products Corp., Detroit

Beer Bars and Novelty Boxes

Bastian-Blessing Co., Chicago
Friedrich Sales Corp., Ed.
San Antonio, Tex.
Liquid Carbonic Corp., Chicago
Russ Soda Fountain Co., Cleveland
Schaefer, Inc., Harold L., Minneapolis

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DIAL IN
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A source of quick profits. Easiest to sell. For beer, root beer, water, carbonated drinks, etc. Fits standard beer coil box. Perfect foam control. Accurate. Costs less to install and operate. Permits steam or chemical cleaning of beer coils. All refrigerants.

See Your Jobber or Write Direct

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457 NORTH ARTESIAN AVENUE, CHICAGO, ILLINOIS

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Carbonic Gas Regulators

Bastian Blessing Co., Chicago

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Saylor-Beall Mfg. Co., Detroit

Schaefer, Inc., Harold L., Minneapolis

Uniflow Mfg. Co., Erie, Pa.

Weber Air Compressor Co., Newark

Beer Taps

American Tap Bush Co., Detroit

Central Brass Mfg. Co., Cleveland

Cornelius Co., Minneapolis

FREE LAYOUT AND PLANS

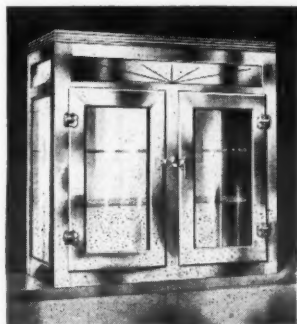
Leitner **ECONOMY** REFRIGERATED DISPLAY CASE

This case is very popular — every inch Leitner quality. Beauty, too, in stainless steel with heavy chrome hardware.

M. LEITNER & COMPANY

2322 Ogden Ave. • Chicago, Ill.

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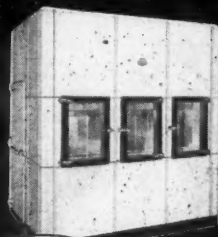
A COMPLETE NEW LINE For 1938!



Sets the Pace FOR VALUE!

Tyler welded steel commercial refrigerators have scored one of the most remarkable successes in food store history. Their welded steel construction — with no wood framework to rot, warp or leak heat — quickly proved superiority over all other types. Modern line-production factory methods created an amazing new standard of values.

Tyler factory space had to be trebled within two years to meet the demand. Now, here's more good news! For 1938, Tyler offers a **Complete Line** of commercial refrigerators. Every item an exceptional value; with new streamlined beauty and many valuable new features to help you increase sales and profits. Tyler also offers big values in sanitary steel produce displays, shelving, counters and tables. Write today for free literature and money-saving facts. Please mention the items which interest you most.



TYLER

WELDED STEEL

Refrigerators



TYLER FIXTURE CORPORATION

Dept. ED, Niles, Michigan

Please send free literature on Tyler

..... Display Cases

..... Produce Racks

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..... Walk-in Coolers

..... Counters and Tables

Name

Address

Commercial Refrigerators and Equipment

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Anheuser-Busch, Inc.
Refrigeration Division, St. Louis
Atherton Co., F. A., Worcester, Mass.
Bally Case & Cooler Co., Bally, Pa.
Banta Refrigerator Co., Clearfield, Pa.

Birkenwald Co., S., Portland, Ore.
Bozman & Bros., Inc., R. H., Baltimore
Buller Co., P. B., Omaha, Nebr.
Campbell Refrigerator Co., Milwaukee
Cincinnati Butchers' Supply Corp.
Cincinnati, Ohio
Cruse Refrigerator Co., Louisville, Ky.
Drayer & Hanson, Inc., Los Angeles
Eau Claire Cold Storage Corp.
Eau Claire, Wis.

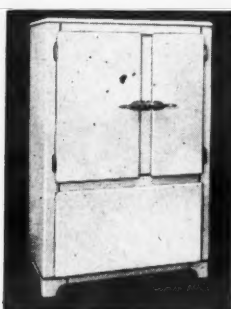
DOMESTIC and COMMERCIAL CABINETS

"Built by Midwest"

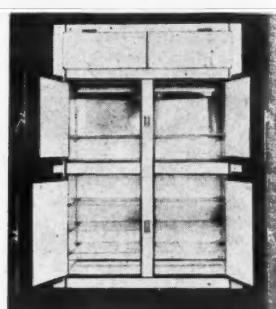
Midwest offers the most complete line of high grade Refrigerator Cabinets in the United States - - - models from 4 to 66 cu. ft. capacity - - - quality built - - - reasonably priced. Orders shipped the same day received on stock models. (Factory located on main line of Santa Fe and Burlington.) Write or wire for prices and discounts.



4, 5, 6, 8 Cu. Ft.



11, 13, 16½ Cu. Ft.

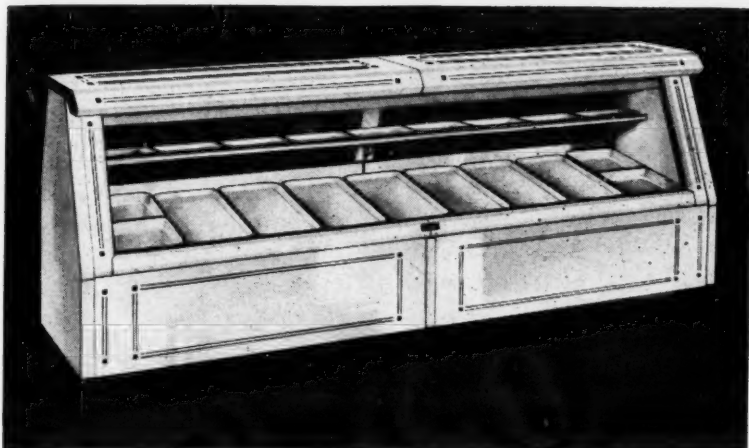


22, 25, 27, 44, 66 Cu. Ft.

Domestic models have all-steel construction, Bonderized Armco metal—Dulux exterior finish—porcelain interior—Balsam Wool insulation—streamlined styling . . .

Commercial models furnished with porcelain, Dulux or stainless steel finish. . . . All models with or without coils (2-door models with ice cube evaporators or coils).

MIDWEST STEELING & ENAMELING COMPANY
CHICAGO, ILL.



Seeger

Refrigerated Display Cases

Sound Engineering principles and knowledge applied to both construction and design has made the Seeger Display Case the long life case . . . convenient and economical to operate . . . and a sound investment for the storekeeper. The Seeger Trade mark—the mark of excellence, is to be found on:

CABINETS

For

Residences
Apartments
Hospitals
Hotels
Clubs
Restaurants
Cafes
Taverns
Meat Markets
Grocers
Delicatessens

DISPLAY CASES

For

Grocers
Meat Markets
Delicatessens

SEEGER REFRIGERATOR COMPANY

Saint Paul

Minnesota

BRANCHES:

New York—Boston—Chicago
Los Angeles—San Francisco

SPECIAL REPRESENTATIVES:

Meyer Smith Co., Buffalo, N. Y.
Seeger-Philadelphia, Inc., Philadelphia, Pa.



REACH-IN REFRIGERATORS

Eleven models, ranging from 20 cu. ft. to 68 cu. ft., designed for refrigeration with overhead coils, ice-maker, or forced draft units. Made in only one quality—the BEST. Many noticeably superior features, including all-porcelain construction and extra thick corkboard insulation. Send for 32-page catalog and discounts; open to all responsible dealers.

COLD STORAGE DOORS

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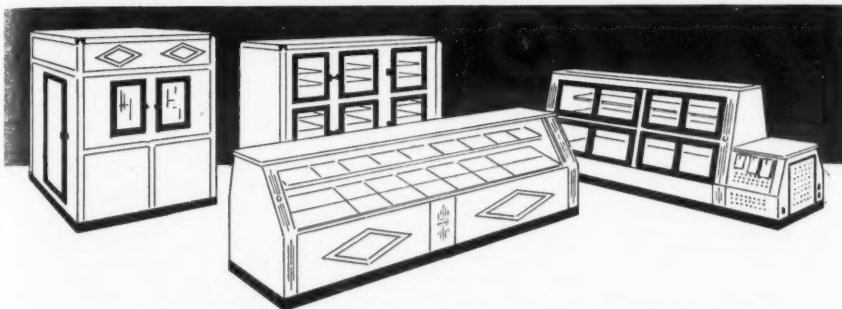
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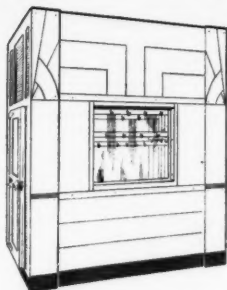
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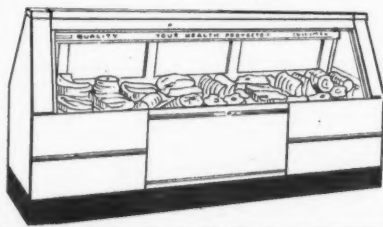
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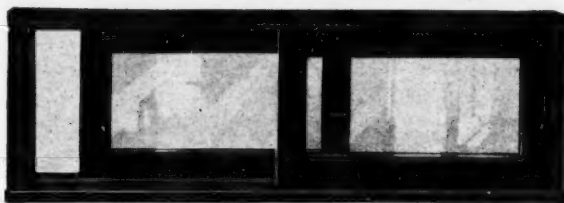
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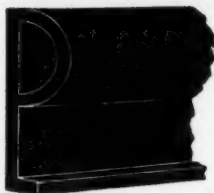
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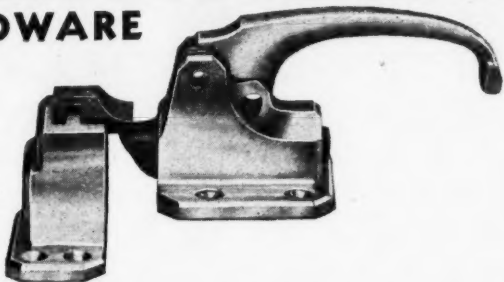


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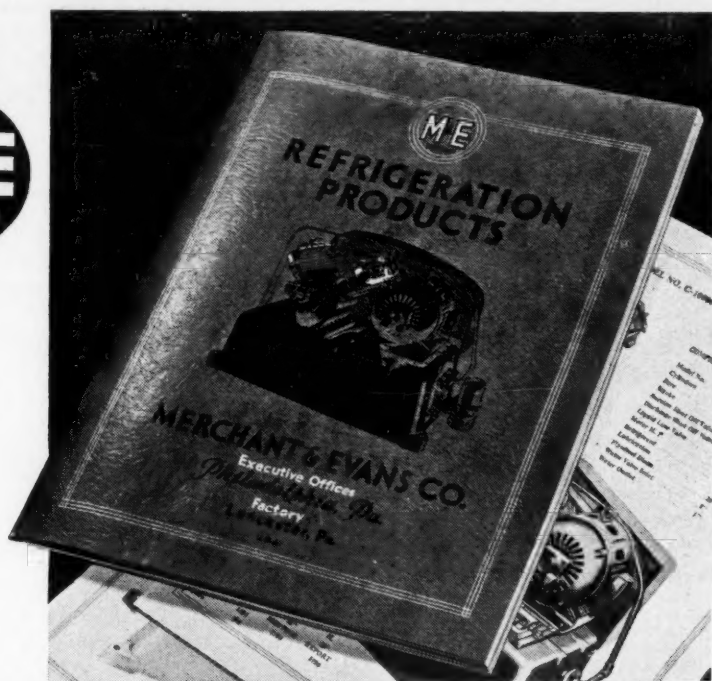
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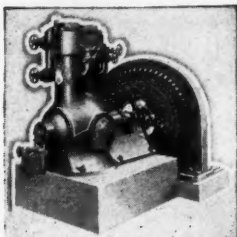
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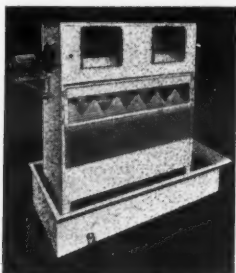
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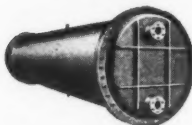


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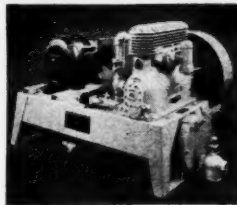
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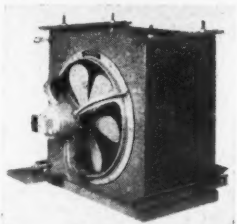
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Baker ColdStream Blower Unit —ceiling type, front and rear views

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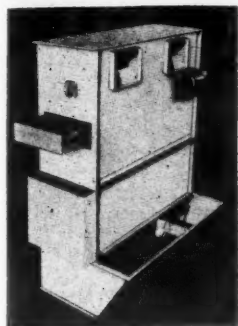
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Baker Coldstream Air Conditioners

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Condensed capacities for largest and smallest sizes. Entering air 80° dry bulb and 50% relative humidity. Entering refrigerant, either water or direct expansion, 40°.

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Baker Evaporative Condensers

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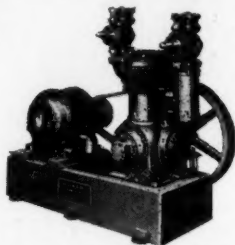
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Baker 2-cylinder vertical enclosed type Freon compression unit, assembled on a rigid metal base with motor and automatic control. Available in 20 to 30 h.p.

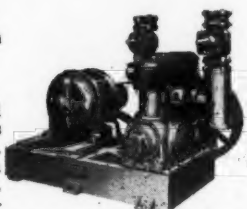
Timken anti-friction roller bearings, balanced bellows crankshaft seal, and built-in removable cartridge-type oil filter. Automatic pressure-type temperature control and high-pressure cut-out (thermostat type also available). V-belt drive. Compactly built, all parts easily accessible.



Baker Two-Cylinder Freon Compression Unit

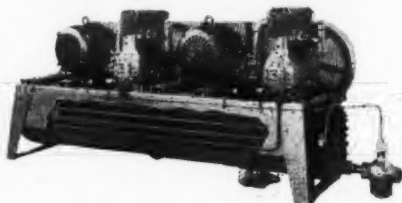
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Same general construction as 2-cylinder unit. Available in 40 to 60 h.p. Direct - connected or V-belt drive.



Baker Four-Cylinder Freon Compression Unit

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Baker Dual Condensing Unit

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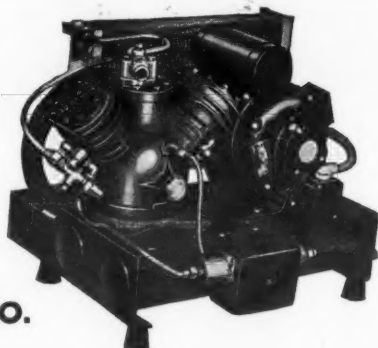
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Sizes range $\frac{1}{8}$ to $\frac{3}{4}$ HP.

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Long Manufacturing Division
Borg-Warner Corp., Detroit

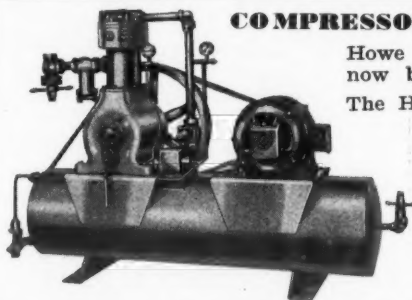
McCord Radiator & Mfg. Co., Detroit

Rome-Turney Radiator Co., Rome, N. Y.

Trenton Auto Radiator Works,
Trenton, N. J.

Condensers, Water Cooled

Acme Industries, Inc., Jackson, Mich.
Baker Ice Machine Co., Inc., Omaha
McCord Radiator & Mfg. Co., Detroit
Standard Refrigeration Co., Chicago
Trenton Auto Radiator Works,
Trenton, N. J.



COMPRESSORS AND CONDENSING UNITS

Howe Methyl and Freon condensing units now built in sizes from $\frac{1}{8}$ to 20 H. P. The Howe line includes compressors up to 150 ton refrigeration, commercial fin coils, air conditioning coils, unit coolers and comfort coolers.

HOWE ICE MACHINE CO.

2825 Montrose Avenue, Chicago, Ill.

Manufacturers of refrigerating and air cooling equipment, exclusively, for over twenty-five years.

G&O

EVAPORATORS

COOLING COILS

CONDENSERS

DEPENDABLE—EFFICIENT

SQUARE FIN TUBING

We are the pioneer manufacturers of individual square fin tubing in this country.

The use of individual fins results in high efficiency in heat transfer from primary tube surface to secondary fin surface because all G & O fins have ample collars around the tube opening insuring liberal contact with tubing.

G & O individual fin tubing can be used for every refrigeration purpose and can be furnished in straight lengths, in "U" bends with short radii, and in continuous return bend coils.



Standard Size — G & O Fin Tubing

O.D. of Tube	Fin Size	Fin Spacing per Inch	Surface per Lineal Foot
$\frac{3}{8}$ "	$\frac{3}{8}$ " sq.	6	.55
$\frac{3}{8}$ "	$\frac{7}{8}$ " rd.	6	.60
$\frac{3}{8}$ "	$\frac{7}{8}$ " sq.	6	.80
$\frac{3}{4}$ "	1 $\frac{1}{8}$ " sq.	6	2.40
1"	2 $\frac{1}{4}$ " sq.	6	4.00

The G&O MANUFACTURING Co.
NEW HAVEN, CONN.

Steel Pipe Coils

Acme Industries, Inc., Jackson, Mich.

Baker Ice Machine Co., Inc., Omaha

Chicago Nipple Mfg. Co., Chicago

Creamery Package Mfg. Co., Chicago

Drayer & Hanson, Inc., Los Angeles

Frick Co., Waynesboro, Pa.

General Refrigeration Corp., Beloit, Wis.

Midwest Pipe & Supply Co., St. Louis

Ohio Pipe Bending & Machine Co.
Cleveland, OhioPhiladelphia Pipe Bending Co.
Philadelphia, Pa.Pittsburgh Pipe Coil & Bending Co.
Etna, Pa.

Refrigeration Appliances, Inc., Chicago

Rempe Co., Chicago

CHICAGO NIPPLE MFG. CO.

1966 SOUTHPORT AVE.
CHICAGO, ILL.

MANUFACTURERS OF

PIPE COILS

PIPE BENDS

HEADERS

RECEIVERS
OF ALL KINDS

Send Us Your
Inquiries

Finned Evaporators

Acme Industries, Inc., Jackson, Mich.

Bush Mfg. Co., Hartford, Conn.

Commercial Coil & Refrigeration Co.
Chicago, Ill.

Fedders Mfg. Co., Buffalo, N. Y.

G. & O. Mfg. Co., New Haven, Conn.

Larkin Refrigerating Corp., Atlanta

Long Manufacturing Division
Borg-Warner Corp., Detroit

Manufacturers Fin Coil Co., Chicago

Marlo Coil Co., St. Louis

McCord Radiator & Mfg. Co., Detroit

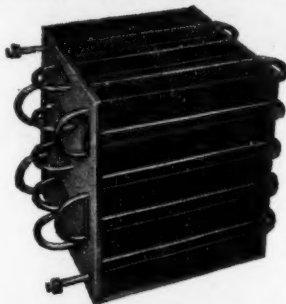
McQuay, Inc., Minneapolis

Peerless of America, Inc., Chicago

Refrigeration Appliances, Inc., Chicago

Refrigeration Economics Co., Inc.
Canton, Ohio

Peerless "Rifled" Fin Coils



For every commercial refrigerating purpose
Peerless Fin Coils are better.

"Rifling" swirls liquid refrigerant within
the tubing, contacting entire tubing wall.

"Rifling" increases coil efficiency 30%.

"Non-Soldered Return Bends" give assurance
that "Where There Are No Joints
There Can Be No Leaks."

"Buy Peerless for Performance"

Peerless of America, Inc.

Established 1912 as Peerless Ice Machine Co.
Three Factories

515 West 35th Street
43-20 34th St. Chicago 3000 S. Main St.
Long Island City, N. Y. Los Angeles, Cal.

FIN COILS FOR EVERY PURPOSE

COMMERCIAL COOLING COILS

AIR CONDITIONING COILS BOTH COOLING & HEATING

1907



1937

IN ALL STANDARD METALS AND FOR ALL REFRIGERANTS

THE BUSH MANUFACTURING CO.

HARTFORD, CONN.

Branch Factory: 610 N. Oakley Blvd., Chicago

NEW YORK

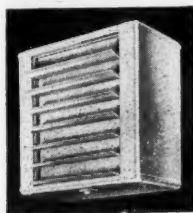
PHILADELPHIA

CINCINNATI

DETROIT

FEDDERS

UNIT COOLERS



Built in a complete line of single and Twin Models for Commercial Refrigeration and Comfort Cooling. Write for Bulletins.

FEDDERS MFG. CO.
BUFFALO, N. Y.

Finned Evaporators

(Continued)

Refrigeration Engineering, Inc.
Los Angeles, Calif.

Rempe Co., Chicago

Rome-Turney Radiator Co., Rome, N. Y.

Trenton Auto Radiator Works,
Trenton, N. J.

Young Radiator Co., Racine, Wis.

Ice Cube Maker Evaporators

Bush Mfg. Co., Hartford, Conn.

Fedders Mfg. Co., Buffalo, N. Y.

McQuay, Inc., Minneapolis

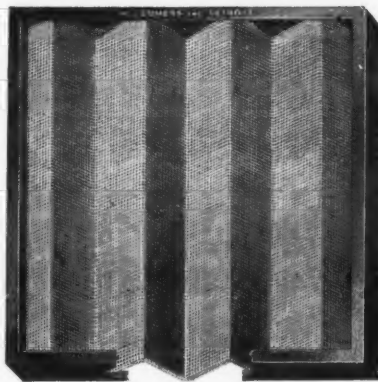
Peerless of America, Inc., Chicago

Refrigeration Engineering, Inc.
Los Angeles, Calif.

Standard Refrigeration Co., Chicago

Trenton Auto Radiator Works,
Trenton, N. J.

Somers Washable "Hair-Glass" Filters



Somers Vee Type Filter

Made in standard interchangeable sizes to fit filter banks from 16" x 25" to 38" x 42" with choice of No. 1, No. 2 or No. 3 pack. Complete information on request.

H.J. SOMERS, INCORPORATED 6053 Wabash Ave.
Detroit, Mich.

Manufacturers of Filters, Hay Fever Machines, Air Conditioning Equipment.

Somers Hair Glass Filters for air-conditioning installations provide everything required in an efficient air-cleaning system. Consider these features:

Maximum of dust, soot and bacteria separation.

Require no adhesive, coating or impregnation.

Indestructible in normal service.

FIREPROOF

Minimum Low Pressure Drop.

WASHABLE

Odorless and non-absorptive.

PERMANENT

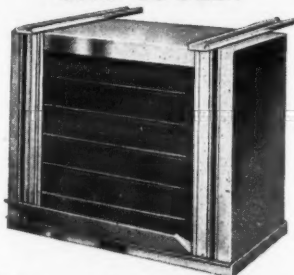
Do not rot or disintegrate.

Somers Hair Glass Filters consist of a hot galvanized frame holding galvanized wire cloth packed with hair-spun glass strands. The glass strands are flexible, do not break up and cannot be drawn into the air stream.

Unit Coolers

Betz Corp., Hammond, Ind.
 Bush Mfg. Co., Hartford, Conn.
 Fedders Mfg. Co., Buffalo, N. Y.
 Larkin Refrigerating Corp., Atlanta
 Manufacturers Fin Coil Co., Chicago
 Modine Mfg. Co., Racine, Wis.
 McQuay, Inc., Minneapolis
 Peerless of America, Inc., Chicago
 Reeves Engineering Co., Milford, Conn.
 Refrigeration Appliances, Inc., Chicago
 Refrigeration Engineering, Inc.
 Los Angeles, Calif.
 Rempe Co., Chicago
 Rome-Turney Radiator Co., Rome, N. Y.
 Thermal Units Mfg. Co., Chicago
 Trenton Auto Radiator Works,
 Trenton, N. J.
 Young Radiator Co., Racine, Wis.

PEERLESS "SYNCHRO-FAN" UNIT COOLER



Full fan speed when compressor operates—half fan speed when compressor shuts down—that's "Synchro-Fan." This control on a Peerless Unit Cooler makes an unbeatable combination in force-draft cooling units.

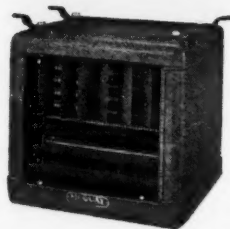
Peerless extra coil surface plus the "Synchro-Fan" control maintains high box humidity—eliminates excessive drying out of stored product.

"Buy Peerless for Performance"

Peerless of America, Inc.

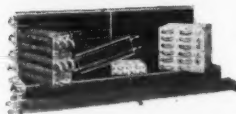
Established 1912 as Peerless Ice Machine Co.
 Three Factories
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 43-20 34th St. Chicago 3000 S. Main St.
 Long Island City, N. Y. Los Angeles, Cal.

McQUAY UNIT COOLERS



For Walk-In Coolers, Storage Rooms, etc., and for all types of fixtures where forced air circulation is desirable.

McQUAY REFRIGERATION COILS



A complete line of Commercial Refrigeration Coils for all purposes.

Ice Cube Makers in both the plain and combination fin coil.

Descriptive Bulletins on above are available as well as on Air Conditioners, Air Conditioning Coils, etc.

McQUAY, INC.
 1600 Broadway N. E.
 Minneapolis Minn.

Dairy, Ice Cream and Soda Fountain Equipment

Milk Coolers

Baker Ice Machine Co., Inc., Omaha

Empire Milking Machine, Inc.
Rochester, N. Y.

Esco Cabinet Co., Westchester, Pa.

Frigidaire Division
General Motors Corp., Dayton

General Electric Co., Cleveland
Specialty Appliance Sales Division

Nash-Kelvinator Corp., Detroit

Norge Division Borg-Warner Corp.
Detroit, Mich.

Steinhorst & Sons, Inc., Emil, Utica, N. Y.

Super-Cold Corp., The, Los Angeles

Westinghouse Electric & Mfg. Co.
Mansfield, Ohio

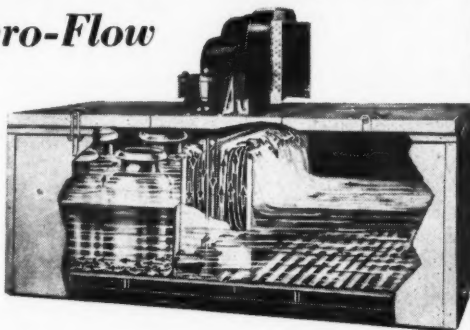
Wilson Cabinet Corp., Smyrna, Del.

York Ice Machinery Co., York, Pa.

ZERO-FLOW *Sells the Dairyman if You Sell Zero-Flow*

You needn't worry about sales-promotion schemes to build dairy-farm business if you've got the Wilson ZERO-FLOW on display. Knowing dairymen see in a single demonstration why ZERO-FLOW is today's most practical milk cooler to help them realize more milk profits.

Cooling advantages for them—a highly efficient insulated cabinet, a *pre-determined high water level selectivity* in either compartment, a centrally located cooling coil, an improved



method of circulating icy-cold water—are *sales advantages* for you. Make your dairy-farm business quick-selling, trouble-free, profitable—find out more about ZERO-FLOW. Write

WILSON CABINET CORP.

114 MAIN ST.
SMYRNA, DEL.

Milk Cooler Cabinets

Atherton Co., F. A., Worcester, Mass.
 Esco Cabinet Co., Westchester, Pa.
 Daniels Mfg. Co., Inc., Sam, Hardwick, Vt.
 Sheldon-Stewart Co., Kalamazoo, Mich.
 Steinhorst & Sons, Inc., Emil, Utica, N. Y.
 Steinhoest & Sons, Inc., Emil, Utica, N. Y.
 Victor Products Corp., Hagerstown, Md.
 Wilson Cabinet Corp., Smyrna, Del.
 Wisner Mfg. Co., New York City

Ice Cream Cabinets

Anheuser-Busch, Inc.
 Refrigeration Division, St. Louis
 Bastian-Blessing Co., Chicago
 Consolidated Equipment Corp.
 Greenville, Mich.
 Dickerson Co., Newark, N. J.
 Moss Equipment Co., J., Brooklyn
 Nash-Kelvinator Corp., Detroit
 Nelson Mfg. Co., C., St. Louis
 Russ Soda Fountain Co., Cleveland
 Schaefer, Inc., Harold L., Minneapolis
 Standard Body Corp., New York City
 Super-Cold Corp., Los Angeles
 Taylor Freezer Corp., Beloit, Wis.

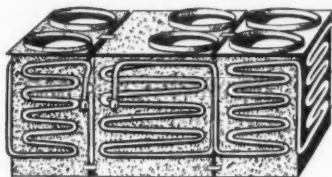
Ice Cream Cabinet Brine Stoppers And Collars

Aetna Rubber Co., Cleveland

Ice Cream Cabinet Conversion Evaporator Units

Consolidated Equipment Corp.
 Greenville, Mich.
 Dickerson Co., Newark, N. J.
 Dole Refrigerating Co., Chicago
 Frigidaire Division
 General Motors Corp., Dayton
 Kold-Hold Mfg. Co., Lansing, Mich.
 Savage Arms Corp., New York City
 Sheip & Vandegrift, Inc., Philadelphia, Pa.
 Standard Body Corp., New York City
 Standard Refrigeration Co., Chicago

STANDARD DRY CONVERSION EVAPORATORS *for* ICE CREAM CABINETS



**Light Weight
Larger Storage
Equalized Temperature
Simplicity of Installation**

Write for Bulletin No. 130

**STANDARD
REFRIGERATION CO.
9 S. Clinton St., Chicago**

Ice Cream Cabinet Lids

Aetna Rubber Co., Cleveland
 American Hard Rubber Co., New York
 Dryden Rubber Co., Chicago
 Luzerne Rubber Co., Trenton, N. J.
 Moss Equipment Co., J., Brooklyn
 Standard Body Corp., New York City

Ice Cream Cabinet Panels and Tops

Moss Equipment Co., J., Brooklyn
 Sheip & Vandegrift, Inc., Philadelphia, Pa.
 Standard Body Corp., New York City
 Ward Co., H. H., Chester, Pa.

SHELDON ICE CREAM FREEZERS (COUNTER-TYPE)

SIZES—3 AND 5 GALLON
 BRINE CIRCULATING OR
 DIRECT EXPANSION
 WITH OR WITHOUT CABINETS

SOLD TO MANUFACTURERS,
 DISTRIBUTORS AND DEALERS
 FOR RESALE

WRITE FOR DETAILED
 INFORMATION, PRICES
 AND DISCOUNTS

SHELDON-STEWART CO.
 KALAMAZOO-MICH.

Ice Cream Cabinet Top Sections

Aetna Rubber Co., Cleveland
 Moss Equipment Co., J., Brooklyn
 Standard Body Corp., New York City

Ice Cream Freezers

Cherry-Burrill Corp., Chicago
 Thompson Machine & Supply Co., Emery
 New York City
 York Ice Machinery Co., York, Pa.

Ice Cream Counter Freezers

Bastian-Blessing Co., Chicago
 Grand Rapids Cabinet Co.
 Grand Rapids, Mich.
 Mills Novelty Co., Chicago
 O'Keefe & Merritt Co., Los Angeles
 Russ Soda Fountain Co., Cleveland
 Thompson Machine & Supply Co., Emery
 New York City
 Tuthill Pump Co., Chicago
 Sheldon-Stewart Co., Kalamazoo, Mich.
 Super-Cold Corp., Los Angeles
 Taylor Freezer Corp., Beloit, Wis.
 Warner Steel Products Co., Ottawa, Kan.

Ice Makers

Baker Ice Machine Co., Inc., Omaha
 Steinhorst & Sons, Inc., Emil, Utica, N. Y.

Ice Cube Makers

Frigidaire Division
General Motors Corp., Dayton

Nash-Kelvinator Corp., Detroit

Westinghouse Electric & Mfg. Co.
Mansfield, Ohio

York Ice Machinery Co., York, Pa.

Soda Fountains

Andrew's Fixture Co., Tacoma, Wash.

Bastian-Blessing Co., Chicago

Carter, Horace A., Richmond, Va.

Consolidated Equipment Corp.
Greenville, Mich.

Grand Rapids Cabinet Co.
Grand Rapids, Mich.

Liquid Carbonic Corp., Chicago

Nelson Mfg. Co., C., St. Louis

Russ Soda Fountain Co., Cleveland

Schaefer, Inc., Harold L., Minneapolis

Weber Showcase & Fixture Co., Inc.
Los Angeles, Calif.

Carbonators

Bastian-Blessing Co., Chicago

Liquid Carbonic Corp., Chicago

Solid CO₂ Liquifiers

Harrisburgh Steel Corp., New York City

Wharton Iron & Steel Co., Wm.
New York City

SWIFT FANS

For all purposes

PULLEYS

CAST IRON

Standard designs or made
to your specifications.

SWIFT MFG. CO.

formerly

COPE-SWIFT CO.

247 McDougall Ave.,
DETROIT, MICH.

STAMPINGS for REFRIGERATOR MANUFACTURERS

- FLAPPER VALVES
- CAGES
- RETAINERS
- CONDENSOR and EVAPORATOR PARTS
- ASSEMBLED BASES
- VALVE PLATES
- DISCHARGE PLATES
- DISCS
- GASKETS
- WASHERS

Pioneers in the field of refrigerator stampings. Our parts are extremely accurate and cleanly finished. We offer experienced tool engineering and modern manufacturing facilities. Submit your stamping problems to us.

DETROIT STAMPING COMPANY

3443 West Fort St.

Detroit, Mich.

Refrigerated Truck Bodies And Equipment

Refrigerated Truck Bodies

American Body & Equipment Co., Dallas
American Car & Foundry Co.
New York City

Anheuser-Busch, Inc.
Refrigeration Division, St. Louis

Auto Truck Equipment Co., Pittsburgh

Batavia Body Co., Batavia, Ill.

Bode-Finn, Inc., Cincinnati

Consolidated Equipment Corp.
Greenville, Mich.

Crown Body Corp., Ltd., Los Angeles

Drayer & Hanson, Inc., Los Angeles

General Electric Co., Erie, Pa.

Gray Body Co., R. H., Austin, Minn.

Guedelhoefer Wagon Co., John
Indianapolis, Ind.

Hackney Bros. Body Co., Wilson, N. C.

International Harvester Co. of America,
Inc., Chicago

Maremont Automotive Products, Inc.
Chicago, Ill.

Meyer Body Co., Inc., Buffalo

Novelty Carriage Works, Spokane, Wash.

Robbins & Burke, Inc., Cambridge, Mass.

Servel, Inc., Hercules Body Division
Evansville, Ind.

Standard Body Corp., New York City

Wentworth & Irwin, Inc., Portland, Ore.

Eutectic Hold Over Plate Type Evaporators

Dole Refrigerating Co., Chicago

Kold-Hold Mfg. Co., Lansing, Mich.

Savage Arms Corp., New York, N. Y.

Insulated Truck Bodies

Beck-Hawkeye Motor Truck Works
Cedar Rapids, Iowa

General Body & Paint Co., Ft. Worth, Tex.

Fitz Gibbon & Crisp, Inc., Trenton, N. J.

Meyer Body Co., Inc., Buffalo, N. Y.

Robbins & Burke, Inc., Cambridge, Mass.

Schnabel Co., Pittsburgh, Pa.

Schaefer Co., Gustav, Cleveland

Truck Body Hardware

Eberhard Mfg. Co., Cleveland

Kason Hardware Corp., Brooklyn

Power Drives

Century Electric Co., St. Louis

Dynatomic Corp., Kenosha, Wis.

PRESSED STEEL TANK COMPANY

Room 1215, 208 S. La Salle St., Chicago
1391 Vanderbilt Concourse Bldg., New York

1473 So. 66th St., Milwaukee
690 Roosevelt Bldg., Los Angeles

Manufacturers of Deep-Drawn Shells and Special Shapes

Hackney
MILWAUKEE

DESIGNING - ENGINEERING - MANUFACTURING SERVICE For the Refrigeration and Air Conditioning Industries

● Hackney pioneered the cold drawing of seamless containers from metal plates. Welding by the Hackney method is recognized as being superior. Over thirty years' experience in the designing, engineering and manufacturing of containers for gases, liquids and solids is your assurance of dependability.

If you use or need metal shapes or shells, send the details of your requirements to Hackney for practical suggestions. There is no obligation.

Typical examples of Hackney shapes and shells are shown below.



ABOVE:
Seamless shell drawn
by Hackney.

BELOW:
Seamless tapered shell made
from one continuous piece of
steel without a joint of any
kind.

LEFT:
Diffuser tube
deep-drawn
seamless by
Hackney for a
large air condi-
tioning com-
pany.

RIGHT:
Condenser shells
or liquid re-
ceivers advan-
tageously made
by the Hackney
process.

DEEP DRAWN SHELLS AND SHAPES

Water Cooling Equipment

Water Coolers

Copeland Refrigeration Corp., Detroit

Cordley & Hayes, New York City

Crane Co., St. Paul, Minn.

Ebco Mfg. Co., Columbus, Ohio

Esco Cabinet Co., Westchester, Pa.

Frigidaire Division

General Motors Corp., Dayton

General Electric Co., Cleveland

Specialty Appliance Sales Division

Nash-Kelvinator Corp., Detroit

Norge Division Borg-Warner Corp.
Detroit, Mich.

Puro Filter Corp. of America, New York

Taylor Co., Halsey W., Warren, Ohio

Unitlow Mfg. Co., Erie, Pa.

Water Cooler Cabinets

Berger Mfg. Co., Division of
Republic Steel Co., Canton, Ohio

Ebco Mfg. Co., Columbus, Ohio

Filtrine Mfg. Co., Brooklyn

Puro Filter Corp. of America, New York

Order Your Copy NOW

This Commercial Refrigeration Buyers' Guide is only a sample of the complete book (Directory No. D-1) which will be off the press about Dec. 1, 1937. It will contain product listings and complete addresses for all manufacturers of refrigeration and air-conditioning equipment, accessories, parts, materials, supplies, and tools.

The new 1938 Directory No. D-1 will be sold at \$1.00 per copy. It will be similar in size, and style of binding, to the popular new series of manuals described on pages 77, 78, and 79.

NOTE: Another Directory of manufacturers (No. D-2) will be published early in 1938. It will not have the classified products listings for buyers as given in this Guide, but will be arranged for the benefit of sales managers, manufacturer's agents, traveling salesmen, and others who need more detailed information. It will give the names of the officers and department heads of each manufacturing company together with information regarding location of factories, branch offices, etc.

A third book in the Directory series (No. D-3) is scheduled for production later. It will contain the Register of Trade Names and information on defunct companies.

Previous editions of the Directory have sold for \$3.00 per copy but the 1938 edition will be divided into **three** books at \$1.00 each, as explained above, in order to provide the listings desired by distributors, dealers, service companies, and other **buyers**, in a book of convenient size.

Business News Publishing Co., 5229 Cass Ave, Detroit

Water Cooling Low Side Systems

Commercial Coil & Refrigeration Co.
Chicago, Ill.

Cordley & Hayes, New York City

Puro Filter Corp. of America, New York

Temprite Products Corp., Detroit

Water Filters & Purifiers

Allen Filter Co., Toledo

Boston Filter Co., Boston

Filtrine Mfg. Co., Brooklyn

Puro Filter Corp. of America, New York

Waters Filter & Cooler Co.
New York City

Water Circulating Pumps

Buffalo Pumps, Inc., N. Tonawanda, N. Y.

Chicago Pump Co., Chicago

Dean Hill Pump Co., Anderson, Ind.

Decatur Pump Co., Decatur, Ill.

Deming Co., Salem, Ohio

Goulds Pumps, Inc., Seneca Falls, N. Y.

Roots-Connersville Blower Corp.
Connersville, Ind.

Viking Pump Co., Cedar Falls, Iowa

Yeomans Bros. Co., Chicago

CORDLEY *Electric* WATER COOLERS

... FOR
EVERY COOLING NEED

Here is a complete line of coolers that meets all conditions of drinking water service, in factory, office, or elsewhere . . . a line that's easy to sell . . . handsome cabinets, compact, trouble-free units . . . pressure or bottle types, in various capacities from two to fifteen gallons per hour.



Nearly ten years of actual service prove the sturdy construction and dependability of Cordley Coolers. Models are also available for remote or multiple installations. May we send you catalog, specification sheets and full information?

★

Such nationally known concerns as these use Cordley Coolers: Cannon Mills, Whitall Tatum, Remington Rand, American Optical, General Foods, and many others.

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165 HUDSON STREET
NEW YORK CITY, NEW YORK

Since
1889

Industrial Refrigeration Equipment

Industrial Refrigeration Systems

Baker Ice Machine Co., Inc., Omaha
British Automatic Refrigerators, Ltd.
Rotherham, Yorkshire, England
Creamery Package Mfg. Co., Chicago
Dersch, Gesswein & Neuert, Inc., Chicago
Frick Co., Waynesboro, Pa.
General Machinery Co., Spokane, Wash.
General Refrigeration Corp., Beloit, Wis.
Howe Ice Machine Co., Chicago
Linde Canadian Refrigeration Co., Ltd.
Montreal, Quebec, Canada
Reliance Refrigerating Machine Co.
Chicago, Ill.
Vilter Mfg. Co., Milwaukee
Vogt Machine Co., Henry, Louisville
Voss Ice Machine Works, New York City
Worthington Pump & Machinery Co.
Carbondale Division, Harrison, N. J.
York Ice Machinery Co., York, Pa.

Steel Valves and Fittings

Baker Ice Machine Co., Inc., Omaha
Creamery Package Mfg. Co., Chicago
Frick Co., Waynesboro, Pa.
Henry Valve Co., Chicago
Parker Mfg. Co., Los Angeles
York Ice Machinery Co., York, Pa.

Industrial Brine Coolers

Baker Ice Machine Co., Inc., Omaha
Filtrine Mfg. Co., Brooklyn
York Ice Machinery Co., York, Pa.

Pipe Covering

Armstrong Cork Products Co.
Lancaster, Pa.
Cork Import Corp., New York City
Cork Insulation Co., Inc., New York City
Crane Co., Chicago
Keasbey Co., Robert A., New York City

Steel Tubing and Pipe

Bethlehem Steel Co., Bethlehem, Pa.
Bundy Tubing Co., Detroit
Michigan Seamless Tube Co.
South Lyon, Mich.
Michigan Steel Tube Products Co., Detroit
National Tube Co., Pittsburgh
Metal Forming Co., Elkhart, Ind.
Republic Steel Corp., Youngstown, Ohio
Spang-Chalfant, Inc., Pittsburgh
Toledo Steel Tube Co., Toledo
Youngstown Sheet & Tube Co.
Youngstown, Ohio



BUNDY TUBING

Bundy Tubing is rolled from copper coated, strip steel. Combining the strength of steel with corrosion resisting properties and suitable ductility, it is superior to copper for installations where great strength and high resistance to vibration are desirable. Inside and outside are clean and free from oxides. It is available in a wide range of sizes; in lengths or completely fabricated. Complete information furnished upon request.

BUNDY TUBING CO.
DETROIT

Commercial Refrigeration Parts And Accessories

Copper Tubing

American Brass Co., Waterbury, Conn.

Bridgeport Brass Co., Bridgeport, Conn.

Chase Brass & Copper Co.
Waterbury, Conn.

Linderme Tube Co., Cleveland

National Copper & Smelting Co., Cleveland

Penn Brass & Copper Co., Erie, Pa.

Revere Copper & Brass Co.
New York City

Roberts Tube Works, Detroit

United Wire & Supply Corp.
Providence, R. I.

Wolverine Tube Co., Detroit

Drying Agents

Aluminum Co. of America, Pittsburgh

Silica Gel Division
Davison Chemical Corp., Baltimore

Solvay Sales Corp., New York City

DRYERS—FILTERS—NEUTRALIZERS—STRAINERS

Domestic Commercial Air Conditioning

The D F N System

Send for Literature



TO JOBBERS: Immediate shipment all types of standard units.
TO MANUFACTURERS: We have the experience and equipment to manufacture to specification.

Mc INTIRE CONNECTOR COMPANY

261 Jefferson St., Newark, N. J.



Yes Sir!

This is *the* seamless copper tubing for refrigeration and air conditioning—LINDERME—the kind that manufacturers use. There's no moisture or scale in this tube—it's annealed in dry, controlled atmosphere. That glistening inside finish sold me! I always use it on tough installation jobs—it bends and flares perfectly and once the job's in, it's done. I know there'll be no line trouble from Linderme tube—it's *factory sealed*.

LINDERME  **TUBE CO.**
CLEVELAND OHIO, U.S.A.

Dehydrators and Filters

Fedders Mfg. Co., Buffalo, N. Y.
 Henry Valve Co., Chicago
 Imperial Brass Co., Chicago
 Kerotest Mfg. Co., Pittsburgh, Pa.
 McIntire Connector Co., Newark, N. J.
 Mueller Brass Co., Port Huron, Mich.
 Perfection Refrigeration Parts Co.
 Harvey, Ill.
 Weatherhead Co., Cleveland

Liquid Indicators

American Injector Co., Detroit
 Imperial Brass Co., Chicago, Ill.
 Kerotest Mfg. Co., Pittsburgh, Pa.
 Mueller Brass Co., Port Huron, Mich.

Gaskets

Chicago-Wilcox Mfg. Co., Chicago
 Victor Mfg. & Gasket Co., Chicago

Oil Separators

American Injector Co., Detroit

Replacement Parts

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 Dehydrators
 Strainers · Filters
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 Line Valves up to
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Henry Valve fittings and accessories are distinguished by their superior quality and advanced engineering. For use with Freon, Methyl Chloride, Ammonia and Sulphur Dioxide Refrigerating and Air Conditioning Systems. Write for descriptive catalogs and name of nearest jobber.

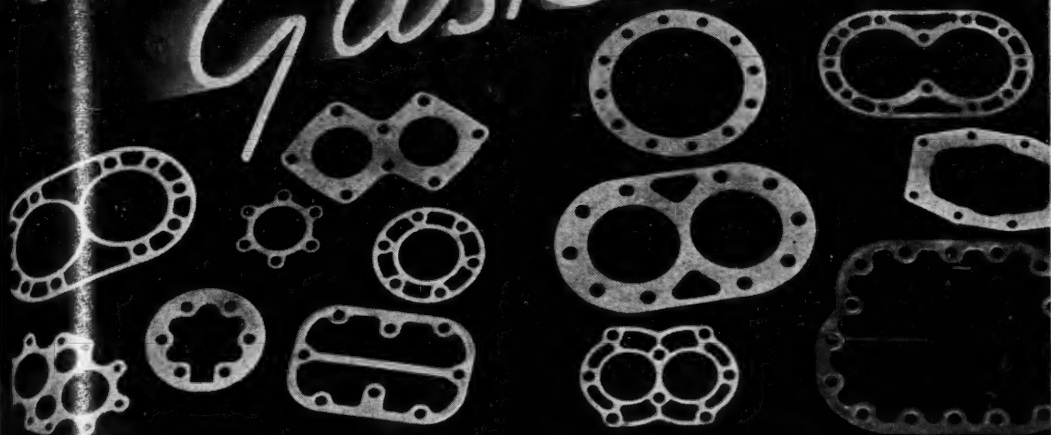
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*tailor made to factory specifications
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First with an exclusive replacement catalog, Victor is now preparing the third issue of their popular Gasket Guide for refrigerating and air conditioning gaskets.

First with special alloys for compressor gaskets, Victor has been supplying the largest compressor manufacturers with original equipment for years.

Victor Is The Leader!



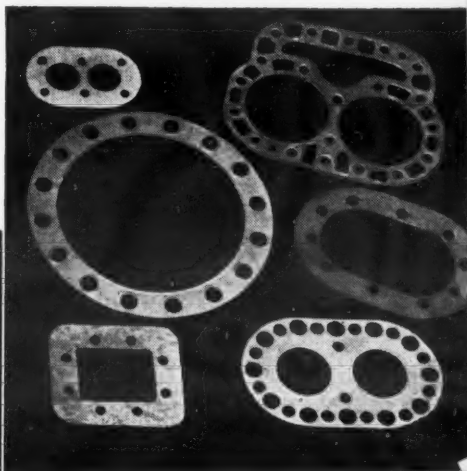
VICTOR

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PRECISION BEARINGS

DEPENDABILITY is the essential thing in refrigeration units; and **DEPENDABILITY** is the outstanding quality of **NORMA-HOFFMANN PRECISION Bearings** which has earned for them acceptance wherever performance beyond the ordinary must be assured Write for the Catalogs. Ask our engineers to work with you on your bearing problem.

There is a **PRECISION Bearing** for crankshafts, connecting-rods, idlers, reduction gears, motors, and for every other purpose throughout your refrigerating unit.



Ball bearings in open type, closed type, self-aligning type, and self-protected, sealed, grease-packed types; roller bearings in a wide range of types.

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Delco Products Division
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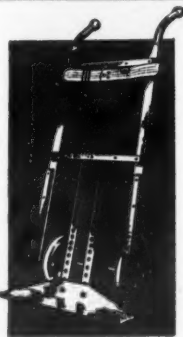
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Heinemann Electric Co., Trenton, N. J.

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Will not mar—Speeds delivery

Type X - 53" long — Type Y - 70" long, both with 8 inch rubber tired wheels. Fitted with movable foot or with permanent wide foot for skirted bottom cabinets.

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Kerotest Mfg. Co., Pittsburgh, Pa.

Mueller Brass Co., Port Huron, Mich.

Perfection Refrigeration Parts Co.
Harvey, Ill.

Weatherhead Co., Cleveland

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American Brass Co., Waterbury, Conn.

American Radiator Co., New York City

Chase Brass & Copper Co.
Waterbury, Conn.

Imperial Brass Co., Chicago

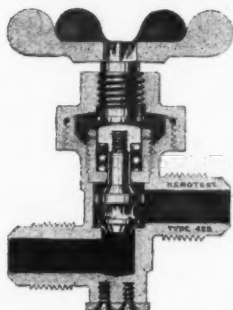
Mueller Brass Co., Port Huron, Mich.

Manifold Assemblies

Imperial Brass Co., Chicago, Ill.

Kerotest Mfg. Co., Pittsburgh, Pa.

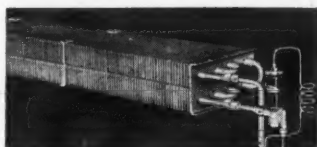
KEROTEST DIAPHRAGM PACKLESS VALVES



Listed as standard by the Underwriter's Laboratories, these patented valves are only $3\frac{1}{4}$ inches high when full open... have unrestricted openings the full diameter of the tubing and are equipped with multiple metal diaphragms impervious to all refrigerants and replaceable with the valve under pressure. See large variety of sizes fully listed in the Kerotest Catalogue.

KEROTEST MFG. CO.
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Manufacturers of a Complete Line

Non-Frost Coils	Thermostatic
Finless Coils	Expansion Valves
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Ice Cube Makers	Constant Pressure Valves
Condensers	Check Valves

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BUFFALO, N. Y.

SEEPAGE PROOF PIPE AND TUBE FITTINGS



Any combination of pipe and tube fittings is available from Commonwealth's immense stocks. Immediate shipment of standard fittings.

Rapid production on special designs.

To make certain that tight joints will be the rule, not the exception, on refrigeration installations, the leaders of the industry have, for more than 25 years, learned to rely on Commonwealth.

The design, finish, machining, and protection of Commonwealth fittings meets the most exacting requirements. Threads are accurate, seats are protected in shipping and on account of the density of forgings and extruded rod from which all Commonwealth Fittings are made, every fitting is seepage-proof.

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literature.

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BRASS CORPORATION**

COMMONWEALTH AVE. AND G.T.R.R.

DETROIT

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RIGHT
TO
STAY
TIGHT**

MAYSON

AUTOMATIC EXPANSION VALVES

MODELS FOR ALL REFRIGERATORS & REFRIGERANTS



MODEL DM—FOR METHYL CHLORIDE

MODEL DS—FOR SO₂, F-12, ETC.
1/4" Flared tube inlet—1/4" pipe tap
outlet. Other connections optional but
supplied only when specified.

Needle always held in perfect alignment with seat, eliminating chatter, wear, and damage through rough handling.

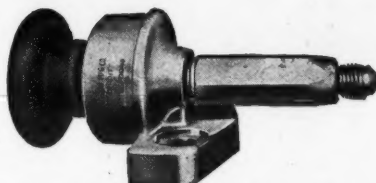
Forged brass body, stainless steel springs, and non-corrosive materials throughout. Convenient and sensitive means of outside adjustment, permanently protected from moisture by non-removable rubber cap.

STELLITE tipped valve needle and stainless steel seat for SO₂, F-12, etc.

DURABLE *Construction*

DEPENDABLE *Performance*

REASONABLE *Low Cost*



MODEL KM—FOR METHYL CHLORIDE

MODEL KS—FOR SO₂, F-12, ETC.
Flange bolt centers 1 5/8". Other centers
optional but supplied only when
specified.

HASTELLOYS tipped valve needle and Monel metal seat for Methyl Chloride.

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CALIFORNIA
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1015 E. 16th St.
CONNECTICUT
BRIDGEPORT
Parsons Bros.
31 E. Washington Ave.
DIST. OF COLUMBIA
WASHINGTON
Refrigeration Supply Co.
1612 14th St.
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JACKSONVILLE
The Jamita Co.
Victoria at Church St.

GEORGIA
ATLANTA
General Service Co.
339 Peachtree St., N.E.
ILLINOIS
CHICAGO
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408 N. Wells St.
Harry Alter Co.
1728 S. Michigan Ave.
Automatic Heating & Cooling
Supply Co., 647 W. Lake St.
H. W. Blythe Co.
2334 S. Michigan Ave.
Borg Warner Service Parts Co.
123 E. 21st St.
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133 N. Wacker Drive
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819 W. Congress St.

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122 W. Illinois St.
JOLIET
H. G. Stone Co.
609 N. Chicago St.
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U. S. Electric Co.
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Republic Electric Co.
LOUISIANA
NEW ORLEANS
Enochs Sales Co.
805 Howard Ave.
SHREVEPORT
Interstate Electric Co.
300 Spring St.

MAYSON

AUTOMATIC EXPANSION VALVES

MODELS FOR ALL REFRIGERATORS & REFRIGERANTS

For sale by Refrigerator distributors and dealers; and Jobbers as listed:

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G-W CONTROLS



This sensitive back pressure check valve is widely used by leading refrigeration engineers . . . prevents the flow of gases in the suction line from one high pressure coil to another of lower pressure . . . eliminates condensation of the warm gas in a colder coil . . . stops frosting of suction lines . . . shortens running time of the compressor . . . used on all systems . . . regular sizes $\frac{1}{2}$ ", $\frac{3}{8}$ " and $\frac{1}{4}$ " O.D. copper tubing. See Kerotest catalogue for complete details.

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MFG. CO. Pittsburgh

YOUR GUARANTEE OF
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BAROSTAT

TRADE MARK

VALVE

10 YEARS OF INTERNATIONAL
FIELD EXPERIENCE
SNAP ACTION

TWO TEMPERATURE CONTROL
FOR SULPHUR DIOXIDE, FREON,
METHYL CHLORIDE

Range: 15" Vac.—40 Lb. Pres.
Differential: 10 Lb. Pres.—30 Lb. Pres.

NOW BUILT WITH

1. $\frac{1}{2}$ " VALVE ORIFICE
2. VISIBLE DIFFERENTIAL ADJUSTMENT
3. $\frac{5}{8}$ " MALE FLARES OR I.P.S. FEMALE
4. PRESSURE GAUGE ATTACHMENT

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Kerotest Mfg. Co., Pittsburgh, Pa.
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Detroit Lubricator Co., Detroit
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FREDERICKSEN*Specialists* IN THE MANUFACTURE OF**SEAL RINGS****BUSHINGS****SEAL NOSES****BEARINGS**

Leading manufacturers in the refrigeration and air conditioning industry have found, through their own experiences, that SABECO metal seals are unequaled where refrigerants, oil, or water must be held positively and permanently. Today, thousands of SABECO installations are being made with the assurance that there will be no trouble, no untimely failure in the compressor seal.

Outstanding qualities which make SABECO metal so satisfactory for the exacting requirements of refrigeration engineers include: high lead content (22%) achieved without the use of catalytic agents; correct tin content (8.5—9.5%) assuring hardness without brittleness; a maximum impurity content of 2/10 of 1%, rarely equaled in bronze manufacture and a positive safeguard against

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Electrimatic Corp., Chicago

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Perfection Refrigeration Parts Co.
 Harvey, Ill.

Refrigerating Specialties Co., Chicago

Shank Co., Cyrus, Chicago

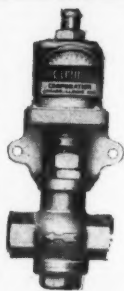
Tagliabue Mfg. Co., C. J., New York City

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American Injector Co., Detroit
 Art Valve Co., Chicago

Two Temperature Valves

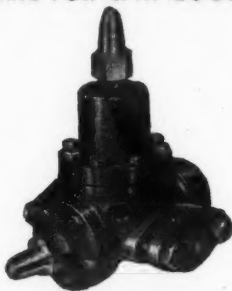
American Injector Co., Detroit
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**TYPE WP
 CONDENSING
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 REGULATORS**

ELECTRIMATIC

**REFRIGERATION
 AND
 AIR CONDITIONING CONTROLS**
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**TYPE RB
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**TYPE SL
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 2100 INDIANA AVE., CHICAGO, ILL.

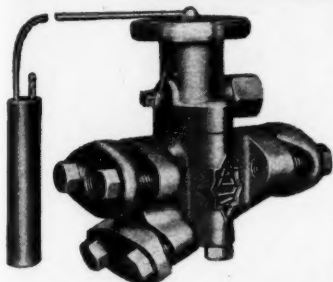
ALCO VALVE CO., Inc.

*Engineered
Refrigerant Control*



**2626 Big Bend Blvd.
St. Louis, Missouri**

THERMO EXPANSION VALVES



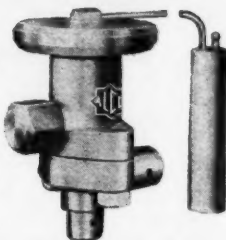
They assure positive, independent, automatic control of liquid feed in each refrigerated unit of a multiple system.

They automatically regulate liquid feed and suction pressure in accord with the refrigerating load in any unit, thereby materially increasing the efficiency of the compressor as well as the evaporating coils.

They provide a positive method of obtaining a maximum wet interior surface in any type of evaporator.

They are sensitive to the slightest change in suction superheat, but are adjustable to control the liquid flow at any required degree of suction superheat without permitting the return of liquid refrigerant to the compressor.

There is a size and type for all refrigerants and all capacities from fractional tonnage to 60 tons Ammonia, 95 tons Methyl Chloride, or 50 tons Freon.



MAGNET LIQUID STOP VALVES

are positive acting, and tight closing. They are indispensable wherever instantaneous closing of the liquid supply line is indicated. They are used extensively with expansion valves where the temperature difference between the refrigerant and the refrigerated substance or area is very small. They are also used extensively with Alco Float Switches to maintain a constant liquid level in flooded evaporators.



All types are available in all the ordinary pipe sizes up to 1½ in., and for tonnage capacities ranging from fractional tonnage to 120 tons Ammonia, 60 tons Methyl Chloride, or 30 tons Freon.

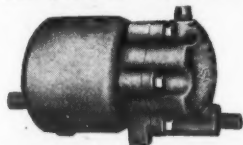
MAGNETIC SUCTION STOP VALVES

are designed for use as suction line shut-off or as low side by-pass valves. They are built without packing so as to operate successfully on heavily frosted lines. Makes possible individual control of two or more evaporating units in a multiple system even though there is a wide difference in temperature requirement or load conditions. They provide individual temperature control in any number of refrigerated units in a series system either flooded or fed by a constant pressure expansion valve. Built in ½ in., ¾ in., 1 in., 1¼ in., 1½ in., or 2 in. sizes.



LIQUID FLOAT VALVES

are provided with a patented vent tube inside the body which prevents gas binding, and permits the valve to be installed at the highest point on a full flooded system even though many feet above the liquid receiver. They may also be installed at a low point in the system and will perform their function equally as well. Available in a variety of capacities up to 25 tons Ammonia, 10 tons Methyl Chloride, or 5 tons Freon.



ELECTRIC

FLOAT SWITCHES

are highly efficient for the maintaining of a constant liquid level in individual flooded evaporators. Particularly desirable for use on tubular coolers. There is no liquid flow through the Float Switch. By means of its electric switch, it operates a magnetic valve in the liquid line, thereby maintaining the desired liquid level to within a limit of less than one inch.



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Detroit Lubricator Co., Detroit

Mercoid Corp., Chicago

Minneapolis-Honeywell Regulator Co.
Minneapolis, Minn.

Penn Electric Switch Co., Goshen, Ind.

Ranco, Inc., Columbus, Ohio

Red Seal Controller Co., Milwaukee

Square D Co., Regulator Div., Detroit

Tagliabue Mfg. Co., C. J., New York City

Thermostats

Cutler-Hammer, Inc., Milwaukee

Detroit Lubricator Co., Detroit

General Controls Co., San Francisco

H-B Instrument Co., Philadelphia

Mercoid Corp., Chicago

Minneapolis-Honeywell Regulator Co.
Minneapolis, Minn.

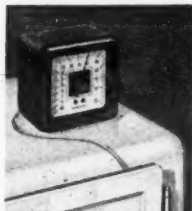
Penn Electric Switch Co., Goshen, Ind.

Ranco, Inc., Columbus, Ohio

Red Seal Controller Co., Milwaukee

Square D Co., Regulator Div., Detroit

Tagliabue Mfg. Co., C. J., New York City



"Recalibrator"
means lasting
accuracy

This patented feature is found in the "Serviceman" described above, and is available in all Marsh refrigeration instruments. It is not subject to the errors of a pointer resetting device. It actually recalibrates the instrument for all points on the dial.

WRITE
FOR NEW
REFRIGERATION
CATALOG

No more guess-work when you use the **MARSH "Serviceman"** REFRIGERATION SERVICE THERMOMETER

It eliminates all the guess-work of a pocket thermometer in service work. Gives you an accurate, easily read, remote reading in the only proper way—with a closed door. Plenty of tubing to reach point of testing, neatly compacted into case. Guaranteed within one degree—has "Recalibrator" to

keep it accurate. Use it for servicing all jobs, household and commercial, also in selling refrigerators. Sold in -10° to $+65^{\circ}$ or -10° to $+100^{\circ}$ range at remarkably low dealers net price of (Subject to change without notice.)

\$5.00
F.O.B.
Factory

Use MARSH Gauges, Recorders and Thermometers

It pays to use refrigeration instruments that are built to "take it" year after year. Marsh gauges, the standard of accuracy, are available in all types for all uses including sulphur dioxide, Freon, carbon dioxide, ammonia and methyl chloride. Marsh recording gauges and recording thermometers are known for rugged construction and lasting accuracy.



JAS. P. MARSH CORPORATION

2069 SOUTHPORT AVENUE, CHICAGO

"GENUINE DETROIT" Controls



HOW IT LOOKS	WHAT IT IS	WHERE IT IS USED	WHAT IT DOES
	TWO ELEVEN ROOM THERMOSTAT	In either high or low voltage control circuits of heating and air conditioning installations.	Controls operation of burner motor, Solenoid Valve, damper motor, or Thermator gas valve in accordance with changes in room temperature.
	NO. 197 HUMIDISTAT	In either high or low voltage control circuits of air conditioning or humidification installations.	Controls the operation of solenoids, motor operated valves, damper motors, relays, heaters, compressors or fans in accordance with changes in humidity.
	NO. 691 DIFFERENTIAL THERMOSTAT	In low voltage circuit for summer air conditioning installations.	Automatically controls operation of cooling unit to maintain a specified difference between indoor and outdoor temperatures. Prevents "Over-Cooling".
	NO. 431 Duct Damper Motor UNIT	On ducts for forced air conditioning systems.	Operates duct damper and Automatic Stoker, Oil or Gas Burner in response to zone thermostat.
	NO. 683-R3 & 683-W2 SOLENOID VALVES	In the liquid or suction line of refrigerating units and in the water supply line of humidifiers.	Controls the flow of refrigerant or the flow of water in response to action of thermostat, pressure switch or humidistat.
	NO. 686 SOLENOID VALVE (Large Capacity)	Large Capacity valve for refrigeration liquid or suction lines or water supply lines.	Controls flow of refrigerant or water. Operated by pressure, temperature or humidity control.
	NO. 250 Series CONTROLS FOR REFRIGERATION	In commercial refrigeration and air conditioning systems.	Controls operation of compressor in accordance with changes in temperature, pressure or vacuum. Available with or without high pressure cutout.
	NO. 673 THERMOSTATIC EXPANSION VALVE	In liquid line to evaporator coil of cooling and refrigeration installations.	Keeps evaporator full of refrigerant at all times, avoiding temperature lag or motor overload in starting.
	No. 781, 783 & 785 THERMOSTATIC EXPANSION VALVES	Large capacity valves used in liquid lines to evaporating coils of large air conditioning installations.	Keeps evaporator completely refrigerated and entire system in perfect balance.



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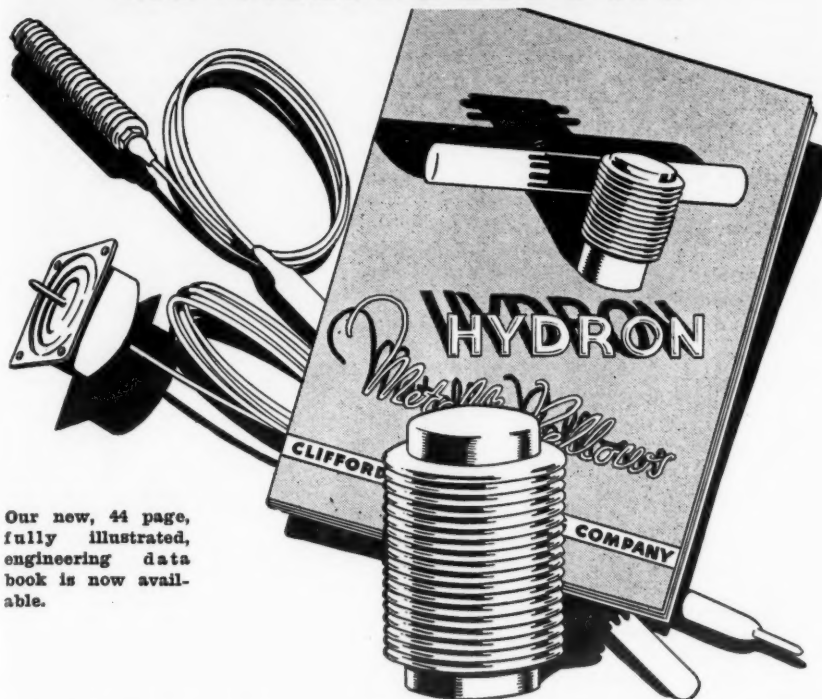
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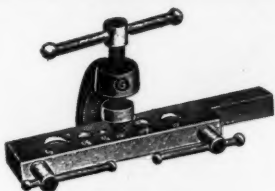
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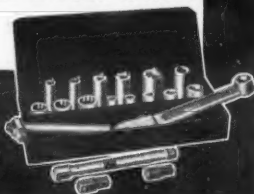
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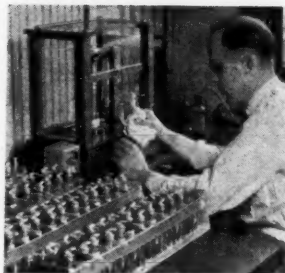
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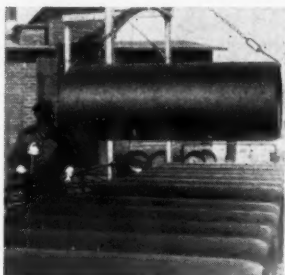
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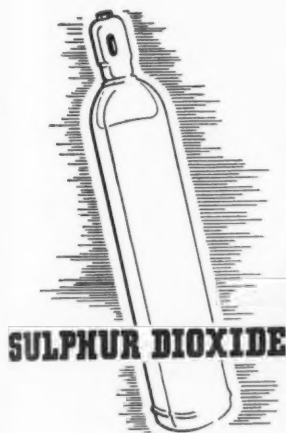
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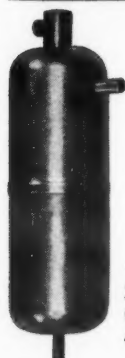
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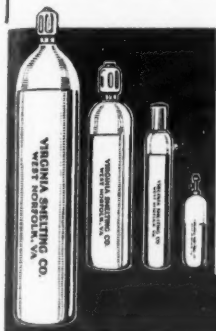
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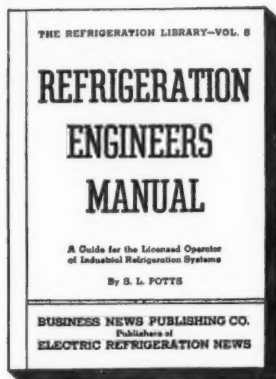
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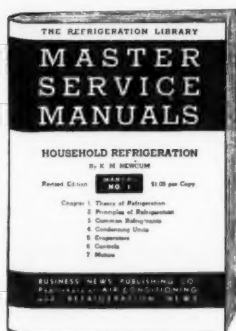
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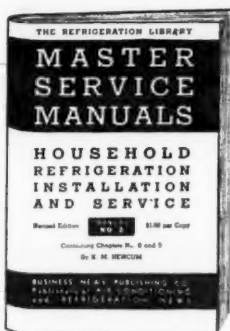
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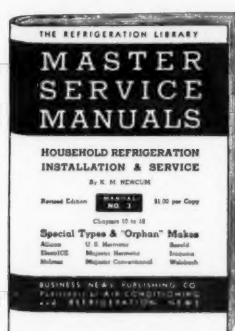
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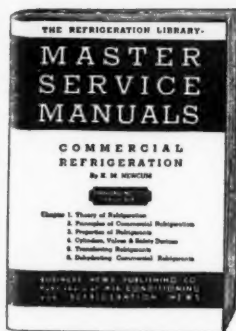
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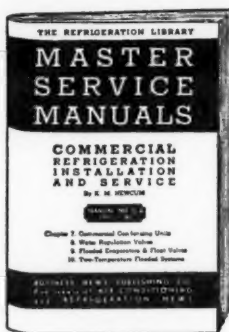
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